MEDICAL LIBRARY NOV 14 1947

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY NOVEMBER 1 1947

TABLE OF CONTENTS

All the Vitamins LESLIE J. HARRIS, SC.D., F.R.I.C. 681

"Q" Fever J. E. CAUGHEY, M.D., M.R.C.P., and J. A. DUDGEON, M.D. 684

Plasma Viscosity in Rheumatic Diseases I. C. COWAN, M.B., and JOHN HARKNESS, M.B. 686

A Case of Keratodermia Punctata BENTLEY PHILLIPS, M.D. 689

Vitamin K for Chilblains D. P. WHEATLEY, M.B. 689

Calcium Deposits in the Iris C. PONIEDEL, M.B. 691

Operation for Thoracic Aneurysm F. T. RANSON, F.R.C.S.Ed. 692

MEDICAL MEMORANDA

Traumatic Recto-Vesical Fistula. G. S. ANDREWS, M.B., Ch.B. 693

Traumatic Valvular Pneumothorax. G. S. WATSON, M.B., Ch.B. 693

GENERAL ARTICLES AND NEWS

Centenary of Chloroform Anaesthesia. DOUGLAS GUTHRIE, M.D., F.R.C.S.Ed. 701

Method of Abdominal Palpation. E. W. PRICE, M.B., B.Ch., D.T.M. 703

DEAF-MUTISM IN SWITZERLAND 703

NEW CONTINENTAL HOSPITALS 704

Control of Hot-air Sterilization of Syringes. J. COLQUHOUN, M.B., and ARTHUR JORDAN, D.Sc., M.B. 705

MEDICAL NOTES IN PARLIAMENT 713

MEDICAL NEWS 715

REVIEWS

Renal Circulation 694

Obstetrics 694

Cerebral Palsy 694

Developments in Biochemistry 694

The Louse 695

Books Received 695

OBITUARY

George Riddoch, M.D., F.R.C.P. 711

Lieut.-Gen. Sir Harold Fawcus, K.C.B., C.M.G., D.S.O., M.B. 712

E. A. Starling, M.B. 712

F. K. Smith, M.B. 713

T. B. Evans, M.B. 713

Epidemiology Section 714

LEADING ARTICLES

Food Cuts and Vitamins 696

German Tropical Medicine 697

ANNOTATIONS

Nobel Prize for Medicine 698

Investigation into Poliomyelitis 698

Centenary of Chloroform Anaesthesia 699

Carcinoma of the Penis 699

Indium 700

Treatment of Undulant Fever 700

REPORTS OF SOCIETIES

ROYAL SOCIETY OF MEDICINE: The Renal Circulation 705

QUESTIONS AND COMMENTS

Bates on Better Eyesight—Osteoarthritis of Hips—Kapeller-Adler Pregnancy Test—Addison's Disease—Beeswax in Oily Solutions of Penicillin—Intertrochanteric Fracture of Femur—Antiseptic Effect of Ether—Toxicity of Phenobarbitone—Tobacco and Poliomyelitis—Loosening the Piston of a Syringe—Addendum 717–18

SUPPLEMENT

HEARD AT HEADQUARTERS 99

OPHTHALMIC GROUP COMMITTEE 100

TRADE UNION MEMBERSHIP 100

JOINT TUBERCULOSIS COUNCIL 100

CORRESPONDENCE 100

H.M. FORCES APPOINTMENTS 102

ASSOCIATION NOTICES 102

CORRESPONDENCE

Soviet Science. K. W. MONSARRAT, F.R.C.S.Ed. 706

Education for General Practice. JAMES M. TAYLOR, M.R.C.S. 706

Penicillin for Infected Hands. E. JAFFE, M.B.; J. P. RAW, M.B. 707

The Harveian Orations. H. S. STANNUS, M.D. 707

Miliary Appearances in the Lungs in Mitral Stenosis. T. E. GUMPERT, M.B., F.R.C.P. 708

Treatment of Varicose Veins. HAROLD DODD, Ch.M., F.R.C.S. 708

Road Accidents. E. GRANGER, M.B. 708

Heparin for Coronary Thrombosis. J. T. MACLACHLAN, M.D. 709

Treatment of Neurosyphilis. R. PAKENHAM-WALSH, D.M. 709

Pulmonary Haemosiderosis in Mitral Stenosis. A. C. LENDRUM, M.D. 709

Retained Placenta. G. I. WATSON, M.D. 709

Bilateral Abdominal Testes with Teratomatous Change and Torsion. H. J. RICHARDS, F.R.C.S. 709

Midwives and Analgesia. B. L. S. MURTAGH, M.B. 710

Hearing-aids. F. G. CAWSTON, M.D. 710

Salaries of Specialists in N.H.S. G. F. RAWDON SMITH, M.D. 710

The Last Straw—Unholy Smokes! T. STOKES, M.B. 710

Medical Photography. H. MANDIWALL, M.B., L.D.S. 710

Points from Letters 710

MEDICO-LEGAL

Anti-Vivisection Societies and Income Tax 713

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.1

No. 4530, WEEKLY. PRICE 1/6

Copyright

REGISTERED AS A NEWSPAPER

Wear a fresh suit every day

It doesn't cost coupons to be *always* smartly dressed if you subscribe to University Tailors "Care of Clothes by Subscription" Service. Let us collect your suits, overcoats, and costumes for dust-freeing, stain removing, minor renovations, reshaping and tailor-pressing every week, fortnight or month. *Regular* attention keeps your clothes like new and usually prevents the need for chemical cleaning.

Turning! Years of experience have enabled us to perfect the art of TURNING GARMENTS. We will be glad to advise Subscribers whether their suits justify the moderate cost of "University Turning"

Annual Subscriptions:

WEEKLY Service 20 gns.

FORTNIGHTLY Service 11 gns.

MONTHLY Service 6 gns.

Write for full details to:

UNIVERSITY TAILORS LTD

London, S.W.8

The Care of Clothes by Subscription

SALTAIR

SALT'S STILL SUPPLY

SALT'S wish to announce that, notwithstanding the present restrictions and labour shortages, they still continue to make and supply

SURGICAL BELTS to individual measurements for Board of Trade Approved list of conditions

ELASTIC HOSIERY in all Thread Elastic qualities (Silk not now being available)

TRUSSES for all types of hernia to individual requirements

ALSO ARTIFICIAL LIMBS AND SURGICAL APPLIANCES

Appointments at London address: 1, STANLEY HOUSE, 103, Marylebone High Street, London, W.1. Tel.: Welbeck 3034.

SLOANE 0022

GODFREY DAVIS LIMITED

VICTORIA, S.W.1

CONTRACT TERMS FOR CAR HIRE

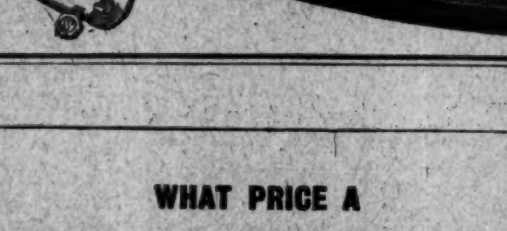
You can have a modern car, with or without chauffeur, at your command constantly, for business and professional uses, by taking advantage of our contract facilities.

You will thus enjoy the convenience of car ownership without trouble or outlay, and with immediate replacement when the car requires servicing.

POST-WAR CARS

PRE-WAR COURTESY

WHAT PRICE A SUMMER HOLIDAY NEXT WINTER?



Wouldn't it be wonderful, one cold morning next winter, to wake in the knowledge that within a few hours you would have left grey skies and chill north-easters well behind—and be basking in semi-tropic sunshine? That is the prospect the Winter Sunshine Club offers you.

With the Club you could make the unique and unforgettable Grand Tour of South Africa next winter. Travelling by one of the Club's luxurious new Viking air liners you could see such wonders as ostrich farms and game reserves, diamond mines and tribal dances, and some of the most glamorous scenery in the world. At an all-in cost of £495 you could enjoy six weeks that will remain forever among your happiest memories. The holiday of your life awaits you.

For full particulars write to **The Winter Sunshine Club, 309Q Regent Street, London, W.1.**

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 1 1947

ALL THE VITAMINS

BY

LESLIE J. HARRIS, Sc.D., D.Sc., F.R.I.C.

Dunn Nutritional Laboratory, University of Cambridge, and Medical Research Council

Q.—*Please give a list of vitamins with all their different names and with notes on the signs and symptoms of deficiency.*

A.—The answer would take more space than can be allowed in "Any Questions?" and at the request of the Editor the following article has been contributed.

The vitamins which so far have been shown to be needed by man, or to be of undoubted clinical significance, are the following: vitamin A, vitamin B_1, three components of the vitamin B_2 complex—namely, nicotinic acid, riboflavin, and folic acid—vitamins C, D, and K, together with several different forms and modifications of most of them.

The significance of some other vitamins for human nutrition is still somewhat uncertain: these include two additional "B_2 vitamins" (biotin—vitamin H—and choline), and also vitamins E, F, and P.

A third group of vitamins comprises those which have so far been demonstrated only by means of animal experiments. These consist of four vitamins of the B_2 group (vitamin B_6 — pyridoxin — pantothenic acid, inositol, *p*-aminobenzoic acid). The vitamins will be described in three groups in the above order.

I. Vitamins Needed by Man

Vitamins A

These include vitamin A proper (otherwise called vitamin A_1 or axerophthol) and the principal provitamin, β-carotene. There are several other forms of vitamin A—namely, vitamin A_2, anhydro-vitamin A, subvitamin A—and several other active carotenoids also serve as provitamins in addition to β-carotene—for example, α- and γ-carotene, kryptoxanthine, leprotene, echinenone, myxoxanthine, aphanene, aphanicene—but none of these have any special medical interest. The signs and symptoms of deficiency of vitamin A may include: diminished powers of dark adaptation (this is the earliest and most delicate diagnostic sign), progressing to night blindness; xerosis and keratinization of various membrane tissues, giving rise to a liability to local infections; a keratinized follicular papular eruption in the skin; xerotic changes in the conjunctiva and cornea (best detected by slit-lamp inspection or examination of corneal scrapings for keratinized cells), leading to "Bitot's spots" and to xerophthalmia and, in advanced cases, keratomalacia. In experimental animals other changes observed in deficiency include renal calculi, degenerative changes in the central nervous system, periodontal hyperplasia, overgrowth of bone, failure in reproduction, and of course impaired growth rate. (Among the first signs of inadequate intake, of this or *any* other vitamin, is poor growth.) The best sources of vitamin A include halibut-liver and cod-liver oils, mammalian liver, and milk (or fortified margarine); as carotene it occurs abundantly in green leafy vegetables and in carrots; eggs and butter contain both carotene and vitamin A. The League of Nations standard of requirement is 3,000 i.u. (1 i.u. = 0.6 microgram of β-carotene), but carotene is only about one-half or one-third as well utilized by the animal body compared with an equal amount of vitamin A.

B Group of Vitamins

This comprises the heat-labile vitamin B_1, and the heat-stable vitamin B_2 complex of vitamins (see below).

Vitamin B_1 (aneurin hydrochloride or thiamin hydrochloride) occurs also in nature as the pyrophosphate ester or co-carboxylase. This is the anti-beriberi or antipolyneuritic vitamin. Beriberi, common in the East among populations subsisting too exclusively on diets of "polished" (white) rice, is characterized by polyneuritis of the peripheral nerves (typical manifestations being the patches of paraesthesia in the lower limbs, diminished knee-jerks, wrist-drop, high-stepping gait), by cardiac irregularities (shortness of breath, dyspnoea, tachycardia, dilatation of the right side of the heart), muscular weakness, anorexia, and sometimes emaciation ("dry beriberi") or oedema ("wet beriberi"). The disease may follow several different forms depending on whether the polyneuritic, cardiac, or oedematous symptoms predominate.

Conditioned deficiency of vitamin B_1 (secondary polyneuritis), as distinct from the endemic deficiency seen in the Orient, occurs from time to time in Western countries—as in polyneuritis arising from gastro-intestinal obstruction (which causes faulty absorption of the vitamin), in alcoholic polyneuritis, and in the polyneuritis of pregnancy. In infants and children suboptimal intake of vitamin B_1 has been thought to lead to inadequate growth and gastro-intestinal hypotonia.

The national wheatmeal loaf (about 80–85% extraction) has been an important source of vitamin B_1 in Great Britain since the beginning of the second world war, white flour (72% extraction) containing negligible amounts. The best foods for vitamin B_1 include: dried brewers' yeast (*c.* 1,000–2,000 i.u. per 100 g.), wheat germ, rice germ, barley germ (*c.* 1,000), oatmeal (*c.* 300), wholemeal wheat flour, peas, haricot beans, egg yolk (*c.* 100). The League of Nations standard of requirement for vitamin B_1 is 300 i.u. per day (1 i.u. = 3 μg. = 0.000,003 g.).

Vitamin B_2 when first recognized was thought to be a single factor, and defined as the "heat-stable, water-soluble fraction present in extracts of yeast which prevents pellagra in man, black-tongue in dogs, and a so-called pellagra-like dermatitis in rats and is needed also for promotion of health and growth in rats." As so defined, vitamin B_2 is in reality a *complex* of at least nine vitamins (including nicotinamide, riboflavin, pyridoxin, pantothenic acid, *p*-aminobenzoic acid, inositol, choline, biotin, and folic acid). The term is sometimes used, but less accurately, as synonymous with riboflavin.

B_2 Vitamins Needed By Man

(*a*) *Nicotinamide* (otherwise called nicotinic amide, or niacin amide, or "P-P," or pellagra-preventing, vitamin). The parent substance, nicotinic acid (or niacin), is likewise active, being doubtless converted to the amide in the animal body. In the combined form, in living tissues, nicotinamide occurs as a component of certain enzyme systems—namely, as the two "pyridine coenzymes" (1) codehydrogenase I, or "Euler's cozymase," diphosphopyridine nucleotide, and (2) codehydrogenase II, or "Warburg's enzyme," triphosphopyridine nucleotide.

The signs and symptoms of pellagra in man may be summarized under four headings: (1) The characteristic glossitis and stomatitis, including the "beefy tongue." (2) There develops a persistent diarrhoea. (3) Most typical are the skin lesions. These begin as an erythema resembling sunburn, and progress into a deeper dermatitis, followed by a pigmentation and a great thickening of the dermis. The pathognomonic feature of these eruptions is that they are bilaterally symmetrical, possess a well-defined pigmented border, and occur especially on the parts of the body exposed to the sun or to friction, including the back of the hands and wrists, the face, the upper part of the chest, and the perineal region. (4) Mental symptoms develop as the disease progresses, and in the absence of treatment insanity results.

"Secondary pellagra," or "conditioned deficiency" of nicotinamide, with symptoms similar to the above, is caused by faulty absorption or assimilation of the vitamin, as, for example, in the pellagra of chronic alcoholism or in gastro-intestinal obstruction.

The daily requirement of nicotinamide (preventive) is probably about 10–12 mg. The best sources in food include yeast and liver (or yeast and liver extracts), fish (e.g., canned salmon), meat, pulses, whole wheatmeal or bran, but there is practically none in white flour.

(*b*) *Riboflavin* was formerly called lactoflavin (or ovoflavin, or hepatoflavin, etc., according to its origin) and is still sometimes known as B_2. (More strictly speaking, this term was correctly used when riboflavin was the only known "B_2" vitamin, before it was found to be a complex.) In living tissues riboflavin occurs in the combined form as a coenzyme—namely, iso-alloxazine-adenine-dinucleotide, a component of the enzyme systems known as flavoproteins.

Riboflavin deficiency in man causes a typical "cheilosis" (lesions of the lips) and an angular stomatitis characterized by cracks, scaliness, and maceration at the corners of the mouth, developing into a deep fissuring. Corneal changes, opacity, and vascularization have also been described; but probably both oral and ocular symptoms lack full specificity. In experimental animals the deficiency is likewise marked by corneal lesions and dermatitis, as well as by growth failure. In addition, in birds, deficiency results in a condition described as "curled toe," and is of much practical importance in poultry husbandry. In dogs a condition described as "yellow liver" has been produced.

The daily requirement (preventive) is probably about 1–2 mg. Foods rich in riboflavin include yeast, liver, kidney, milk, and egg-white.

(*c*) *Folic acid* is probably identical with or closely related to factors known severally as the grass juice factor (for guinea-pigs), vitamin B_c (anti-anaemia factor for chicks), vitamin M (for monkeys), and the growth factors for the micro-organism *Lactobacillus casei* and for *Streptococcus lactis R*. In chemical structure it is built from glutamic acid, *p*-aminobenzoic acid, and pterin residues; and certain other pterin derivatives may also be active. Folic acid has been shown to produce a haematopoietic response in Addisonian pernicious anaemia and in some other macrocytic anaemias in man; it is, however, apparently ineffective in controlling cord degeneration in pernicious anaemia. Remarkable success is said to have followed its use in treatment of sprue. A possible anticarcinogenic action is being examined experimentally in animals.

Vitamin C

Vitamin C, or *l*-ascorbic acid (formerly known also in the U.S.A. as cevitamic acid), is the anti-scurvy (antiscorbutic) vitamin. The closely related, and somewhat unstable, reversibly oxidized derivative, dehydroascorbic acid, is also active, and several artificially prepared chemical analogues show some varying degree of activity. Characteristic symptoms of scurvy in the adult are the haemorrhagic manifestations, particularly the spongy gums and the petechiae in the trunk or limbs. Among the early signs may be a follicular hyperkeratosis. In advanced cases there is a pronounced secondary anaemia. Bronchitis and other infections often occur as a complication. The associated symptoms may include sallowness, lassitude and mental depression, pains in the lower limbs, and hardening of the calf muscle due to haemorrhage. In infantile scurvy the diagnostic features include: (1) a tenderness in the lower limb as a result of which the child adopts a characteristic attitude, dreading to be touched; (2) subperiosteal haemorrhage with swelling, e.g., near the lower end of the femur; and (3) the radiological appearance of the long bones, showing a cessation of osteogenesis; the oral lesions may be absent. In scurvy there is an extreme degree of depletion of ascorbic acid from the tissues, as shown by the number of test doses needed before an overflow of the excess into the urine, where it can be estimated by chemical test.

The League of Nations standard requirement is 30 mg. per day. The best sources of the vitamin include, among fresh fruits (in decreasing order): blackcurrants, strawberries, oranges, lemons, grapefruit, gooseberries; there is relatively little in pears, plums, grapes, or some varieties of apples. The richest vegetables include (also in decreasing order): Brussels sprouts, cauliflower, cabbage, and new potatoes. During the cooking of vegetables the loss of vitamin C can be minimized by avoidance of such conditions as the use of excessive amounts of cooking water, an undue prolongation of the time of heating, too much shredding of the vegetable before cooking, and overmuch keeping hot or recooking before serving.

Vitamin D

Vitamin D is the antirachitic vitamin. The two most important forms are: (1) vitamin D_2, or calciferol, prepared artificially by ultra-violet irradiation of ergosterol and present also in certain irradiated plant materials; and (2) vitamin D_3 or irradiated 7-dehydrocholesterol (cholestadien-3-ol), present naturally in fish-liver oils, including halibut, tunny, and cod. Other D vitamins, of little more than academic interest, are the following: irradiated heated

cholesterol; cholesterilene sulphonic acid; irradiated 22-dihydroergosterol; irradiated 7-dehydrositosterol. Rickets (vitamin D deficiency) is characterized particularly by deficient calcification of the bones, especially in the newly forming bone at the epiphysis, where the zone of provisional calcification is increased in breadth and inadequately mineralized. The consequent irregular growth of soft osteoid tissue causes the typical swellings at the epiphysial junctions ("rachitic metaphysis"). The bending of the inadequately calcified bones and the overgrowth of osteoid tissue in turn give rise to the well-recognized deformities bow-legs, knock-knees, rachitic pelvis, "green-stick" fractures, the enlargement of the ends of the bones, and the beading of the ribs. Active rickets is characterized by a deficiency level of inorganic phosphate in the blood and sometimes of calcium, causing spasmophilia (tetany), and by an increase in blood phosphatase. The fundamental chemical lesion in vitamin D deficiency is excessive loss of phosphate and/or calcium in the faeces, with a concurrent drop in their levels in the blood and consequent inadequate calcification of bony tissues. Severe rickets is of course readily detected by the clinical signs, but mild cases of rickets may need *x*-ray diagnosis.

Legitimate "pharmacological" uses of vitamin D—i.e., in the absence of rachitic signs—are: (1) to maintain the level of the blood calcium after parathyroidectomy, and (2) in the treatment of lupus vulgaris by massive local injection. Vitamin D occurs in fish-liver oil (halibut, cod, tunny, etc.) and in smaller quantity in egg yolk and in vitaminized margarine and butter. The international unit is 0.02 μg. of calciferol, the protective dose in early childhood about 500 to 1,500 i.u. per day, and an effective curative dose 1,500 to 3,000 i.u. per day: larger doses may be toxic. For nursing and expectant mothers 1,000–2,000 i.u. daily may be prescribed in order to improve the assimilation of calcium and phosphate and to make good the losses of these elements to the foetus and in the milk.

Vitamin K

Vitamin K includes vitamin K_1 (2-methyl-3-phytyl-1,4-naphthoquinone) and vitamin K_2 (2-methyl-3-difarnesyl-1,4-naphthoquinone). Active homologues include various other 2-methyl-1,4-naphthoquinone derivatives—for example, phthiocol (2-methyl-3-hydroxy-1,4-naphthoquinone) and the parent substance itself, 2-methyl-1,4-naphthoquinone. The last-mentioned, because of its solubility and ease of absorption, is the form of vitamin K most favoured in medicine. In experimental chicks and other species, deficiency of vitamin K causes a lowering of the prothrombin value of the blood, and this results in a haemorrhagic syndrome. In clinical practice vitamin K has been of great service in controlling those haemorrhagic conditions that are due specifically to hypoprothrombinaemia—namely, (*a*) in haemorrhagic disease in the newborn, associated with a transient hypoprothrombinaemia; (*b*) after surgical treatment of obstructive jaundice; and (*c*) in the hypoprothrombinaemia associated with steatorrhoea, sprue, and intestinal obstruction. It is believed that in (*a*) the transient hypoprothrombinaemia can be attributed to the fact that symbiotic microflora, which normally synthesize vitamin K, have not yet become established in the intestine of the infant through the ingestion of food. In (*b*) and (*c*) a faulty absorption of vitamin K is considered to be responsible for the deficiency. In treatment, 1 to 4 mg. of 2-methyl-1,4-naphthoquinone daily is commonly used, given either by injection or by mouth. In the prophylaxis of hypoprothrombinaemia in the newborn the vitamin may be administered as a prenatal routine to the mother, or to the child at birth.

II. Vitamins of Probable or Possible Significance for Humans

Biotin, a growth factor for yeast and other micro-organisms, is identical with the so-called vitamin H (=*Haut* [skin] *Faktor*, or anti-eggwhite injury factor for rats and other animals) and with coenzyme R (growth factor for micro-organisms in the nodule of legumes). It protects rats and other experimental animals from seborrhoeic skin lesions and other abnormalities when they are fed on a special diet containing raw egg-white as an ingredient. The latter contains a protein-like substance or antivitamin, "avidin," which inactivates the vitamin and is destroyed by cooking. Clinical relations are still obscure, although biotin deficiency has been produced experimentally in the human subject by means of a diet of raw egg-white, and there is at least one record of a primary deficiency having been described.

Choline functions in chemical physiology as a transmethylating agent, and as such is replaceable by the amino-acid methionine, or by betaine. In experimental animals choline deficiency results in a fault in fat transport and consequently in fatty liver (sometimes accompanied by necrosis), as well as by haemorrhages in the kidney, paralysis, and other ill effects. Possible clinical applications still remain to be defined, although its use has been proposed to control a negative nitrogen balance in conditions similar to those in which methionine or a high-protein diet has been found effective.

Vitamin E includes α-tocopherol (5,7,8-trimethyl-tocol), β-tocopherol (5,8-dimethyl-tocol), γ-tocopherol (7,8-dimethyl-tocol), and several related synthetic derivatives. In rats or other experimental animals deficiency of vitamin E causes: (1) reproductive failure, due in the female to resorption of the foetuses during gestation, and in the male to degeneration of the germ cell; (2) muscular dystrophy; (3) degeneration of muscle fibres, leading to discoloration of the uterus and other tissues; (4) degeneration of the epithelium of the convoluted tubules of the kidney; (5) an "exudative diathesis"; and (6) dental depigmentation. Many claims have been made for the successful use of vitamin E in treatment of habitual abortion in women, but adequately controlled experiments still seem to be lacking. The supposed effectiveness of vitamin E in treatment of muscular dystrophies lacks confirmation. The richest sources of vitamin E include wheat-germ and rice-germ oils, cotton-seed oil, and green leaves. In contrast with vitamins A and D it is absent from cod-liver oil and other fish-liver oils.

"Vitamin F" is a synonym for the nutritionally essential unsaturated fatty acids—namely, linoleic acid, linolenic acid, and arachidonic acid. Symptoms of deficiency in rats include a scaliness of the tail sometimes leading to caudal necrosis, irregularities in reproduction, and kidney lesions. Deficiency of "vitamin F" has not been recognized to occur in the human, but claims have been made for its use in eczematous conditions.

Vitamin P, a group of substances including citrin (hesperidin glucoside), is claimed to be concerned in controlling fragility of capillary blood vessels, and to be needed as an adjunct to vitamin C in the cure of some symptoms associated with scurvy: this, however, is disputed.

III. Vitamins Needed by Experimental Animals: Significance for Humans Uncertain

Pyridoxin (adermin, vitamin B_6) prevents a deficiency disease in rats characterized by a florid symmetrical dermatitis of the extremities. Another sign in rats, as also in pigs, may be the occurrence of fits. Pyridoxin is thought

to be concerned in the synthesis of fats from protein, and perhaps in tryptophan metabolism. Biologically active derivatives also include pyridoxal (concerned in tyrosine decarboxylation and possibly in biochemical transaminations) and pyridoxamine. Another derivative, pyridoxic acid, is described as a dietary factor for chicks. The need of man for pyridoxin has been questioned: symptoms of deficiency are, however, said to include cheilosis resembling that seen in deficiency of riboflavin. Pyridoxin has recently been used in the treatment of agranulocytosis.

Pantothenic acid (formerly called "chicken pellagra factor" or "filtrate factor") prevents a characteristic dermatitis in birds. It is needed also by dogs and pigs. Signs of deficiency in rats include growth failure, dermatitis, nose-bleeding, depilation about the nose, occurrence of a sticky exudate in the eyelids, and achromotrichia, together with adrenal lesions. It is also a growth factor for micro-organisms. Pantothenic acid is thought to be probably needed by humans, but its significance is still obscure.

Inositol is identical with bios I, needed for growth of yeast and other micro-organisms. An experimental deficiency in rats or mice is said to cause alopecia. Deficiency in man is unknown, but inositol may possibly be a "secondary nutrient"—that is, it may stimulate the intestinal microflora to synthesize other nutrients essential to the host.

Para-aminobenzoic acid (or "Paba") is a growth factor for various micro-organisms, and is said to prevent achromotrichia in some experimental species. It may be a "secondary nutrient" (see above) for man. Its special interest is that drugs of the sulphonamide type exert their bacteriostatic action by "blocking" the bacterium's supply of Paba. Conversely, Paba can negative the bacteriostatic action of the sulpha-drugs. Recent work suggests that large doses of Paba itself may exert an anti-infective action in animals in some circumstances.

"Q" FEVER

A SEROLOGICAL INVESTIGATION OF A GROUP OF CASES PREVIOUSLY REPORTED AS PRIMARY ATYPICAL PNEUMONIA

BY

J. E. CAUGHEY, M.D., M.R.C.P., F.R.A.C.P.
Physician to the Auckland Hospital, New Zealand

AND

J. A. DUDGEON, *M.C.*, M.D.*

Derrick (1937) first described "Q" fever in Australia, and the causative agent was isolated by injection of the blood and urine into guinea-pigs. Burnet and Freeman (1937) showed that the infective agent was a rickettsia, which was subsequently named *Rickettsia burneti*. In the winter of 1944 an epidemic of so-called primary atypical pneumonia occurred among New Zealand troops in the Cassino area (Adams and Porteous, personal communication). Later in 1944 Turner (1945) recorded a similar epidemic of 280 cases from the Naples area. During the same year an outbreak of primary atypical pneumonia occurred among German troops in Greece, and was referred to by them as the "Balkan grippe." Dr. Caminopetros, at the Pasteur Institute in Greece, was able to establish the infection in guinea-pigs by injection of blood taken from cases in the early stages of the infection. Subsequently, blood taken from these guinea-pigs was investigated at the laboratories of the Commission on Acute Respiratory Diseases at Fort Bragg, North Carolina (1946), and *R. burneti* was isolated. In the winter of 1945 an epidemic of "atypical pneumonia" occurred among New Zealand and British troops in the Naples and Caserta area. Similar epidemics arose among British and American troops in the Mediterranean theatre of operations. Detailed studies of some of these epidemics have recently been reported by Robbins and Rustigian (1946). In a British parachute regiment, probably infected in Athens before being transferred to Italy, serological tests later established the diagnosis of "Q" fever. Four epidemics among U.S. troops in Northern Italy were fully investigated. *R. burneti* was isolated from the blood of some of these cases, and by serological tests it was demonstrated that 75% of the cases of "atypical pneumonia" in the same area were in fact cases of "Q" fever.

In May, 1945, an epidemic of "atypical pneumonia" occurred in mid-Atlantic amongst a group of airmen who had recently been stationed at Grottaglie Air Base in Southern Italy, in the Taranto area. These were fully investigated when the airmen arrived at Camp Patrick Henry, Virginia (Feinstein *et al.*, 1946). Epidemiological and aetiological studies were made, and it was demonstrated that the infective agent was the "Balkan grippe" strain of *R. burneti* (Commission on Acute Respiratory Diseases, 1946).

Clinically the epidemic of so-called primary atypical pneumonia recorded by Adams *et al.* (1946) was very similar to the cases recorded by Robbins and Rustigian (1946) and by Feinstein *et al.* (1946), in which the aetiological agent was established as *R. burneti*. On this account it was decided to attempt to establish the infective agent in the New Zealand Hospital cases.

Clinical Features

For complete clinical details of the cases readers are referred to the original report of Adams *et al.* (1946). The main clinical features may be summarized for the sake of completeness.

The epidemic occurred between February and April, 1945, and during this period 511 cases were reported in the Naples–Caserta area, 161 of which were treated at the 2nd N.Z. General Hospital. Of these, 50 consecutive cases were studied in detail clinically and by serial pathological and radiological investigations.

In brief, the clinical picture was as follows. In most cases there was a prodromal period of about six days. The actual onset was abrupt in 96%, and severe headache, malaise, lassitude, and anorexia were the most constant symptoms. Pyrexia from the onset averaged 8.6 days, was over 103° F. (39.4° C.) in 70% of cases, and defervescence was by lysis in 86%. The pulse followed the temperature, though it showed a tendency to a relative bradycardia. The respiratory rate was little affected. Cough was present in 94%, but was not an outstanding feature; it occurred about the fifth day. Sputum was scanty and in 28% contained blood. Chest pains occurred in 46% of the cases, and in 26% of these a pleural rub was detected.

Physical Signs.—Severe toxaemia was a feature of some and one-third showed generalized rhonchi on admission, but the most characteristic sign was a localized patch of sticky persistent crepitations, which were heard on an average on the sixth day from the onset of the acute symptoms. Usually there was enlargement of glands, and the spleen was palpable in 36% of cases. Scanty small pink macules fading on pressure were observed on the chest, back, and flanks in the early stages in 34% of cases.

Laboratory Investigations.—The results of serial pathological investigations can be summarized in brief. The white cell count revealed a slight polymorphonuclear

*A member of the scientific staff of the National Institute for Medical Research, Hampstead, London, at the time of this investigation.

response followed by a slight depression, which was maximal at the end of the first week. Thereafter there was a rise of polymorphs and lymphocytes, reaching a peak at the 16th to 18th day. Differential counts showed a slight relative lymphocytosis after the initial period. The blood sedimentation rate was elevated for two to three weeks. Cephalin-cholesterol flocculation was insignificant early in the disease but increased rapidly after convalescence had been established in the second week, thereafter falling slowly. Using horse cells, a significant positive heterophil antibody reaction was found in 36% of the cases at some stage of the disease. All but three, which were weakly positive, gave negative tests for cold agglutinins at all stages.

Radiological Investigations.—Postero-anterior and lateral studies were made in all cases. The characteristic findings were the localization of the lesion to one or more broncho-pulmonary segments. The infiltration could be described as hazy mottled densities. These investigations also revealed the importance of the lateral studies for the demonstration of lesions situated beyond the heart shadow or in that portion of the lung situated behind the summit of the dome of the diaphragm. Complete radiological resolution in the majority occurred within six weeks of the onset.

Epidemiology

The possible route and sources of infection were examined in detail in some of the Northern Italian epidemics, and although no vectors such as ticks or fleas were incriminated it was found that the disease often made its appearance in units occupying farm billets and also where men were living in close proximity to animals such as cattle, rats, and pigeons. Various forms of insects were discovered in several of these billets, but it was thought that cases probably occurred by inhalation infection arising from the dust and droppings. The complete absence of insect-bites in any of the cases and the uniform picture of pulmonary involvement suggested that the route of infection was via the upper respiratory tract, such as probably occurred in the laboratory infection with the same agent (Robbins and Rustigian, 1946) and as is also seen in laboratory infections with other rickettsial diseases such as epidemic, murine, and scrub typhus. It was also found that many of the civilian population in the area where these cases occurred showed a high level of antibody to "Q" fever, which suggests that the infection was endemic in the local inhabitants.

In the New Zealand Hospital cases most of the patients came from a British infantry training depot where men were living in hutments and in which there was a rapid turnover of personnel. The staff of the hospital escaped lightly. A strict isolation technique was carried out in the wards until the temperature had been normal for a week or until productive cough had ceased. The regimental aid-post orderly, who treated men daily from the infantry training depot, and the hospital librarian, who visited the wards, both contracted the disease, but no case to our knowledge occurred among the nurses and orderlies who were attending the patients.

Serological Investigation

Of the 50 cases recorded by Adams *et al.* (1946), 47 were in United Kingdom troops; the remaining three occurred in New Zealand troops. As a test case, serum was taken from one of the latter and a glycerinated specimen was forwarded by air from New Zealand in 1946 to Dr. Norman Topping, Assistant Director of Health of the Division of Infectious Diseases of the National Institute of Health at Bethesda, Maryland. It was tested for complement fixation against antigen prepared from a strain of *R. burneti* isolated in Italy. The serum was slightly anticomplementary, but in Dr. Topping's opinion the anticomplementary activity had no real significance when compared with the titres against the antigen (Table I).

TABLE I.—*Complement-fixation Titre with Italian "Q" Fever Strain*

	1 : 8	1 : 16	1 : 32	1 : 64	1 : 128	1 : 256
N.Z. test serum	4	4	4	4	3	Trace
Control serum	4	1	0	0	0	0

Subsequently one of us, with the assistance of the staff of A.M.D. 7 of the War Office, was able to collect sera from 21 of the 47 British cases. These were forwarded to Dr. Topping. Nineteen of them arrived safely and on test gave a positive complement-fixation reaction to the Italian strain of "Q" fever (Table II). It will be seen that in some the titres are low, but it has to be remembered that the initial infection occurred almost two years before the date of testing the sera.

TABLE II.—*Result of Complement-fixation Test for "Q" Fever (Italian Strain)*

No. of Serum	Titre	Result	No. of Serum	Titre	Result
1	1 : 64	+	13	1 : 32	+
2	1 : 32	+	14	1 : 32	+
5	1 : 32	+	15	1 : 64	+
6	1 : 16	+	16	1 : 64	+
7	1 : 8	+	17	1 : 4	+
8	1 : 4	+	18	1 : 32	+
9	1 : 64	+	19	1 : 16	+
10	1 : 16	+	20	1 : 32	+
11	1 : 8	+	21	0	–
12	1 : 16	+	22*	1 : 128	+

* Serum sent from New Zealand.

Professor S. P. Bedson kindly tested these sera for antibody to the virus of psittacosis. They were all uniformly negative.

Hence, out of 20 cases checked, 19 gave a positive complement-fixation reaction to the Italian strain of "Q" fever, and it is reasonable to assume that the infective agent of these cases of "primary atypical pneumonia" was the Italian strain of *R. burneti*.

Summary

An epidemic of "primary atypical pneumonia," previously recorded in the *British Medical Journal* as having occurred in the Naples-Caserta area in 1945, has been further investigated serologically, and 19 out of 20 sera tested gave a positive complement-fixation reaction to an Italian strain of "Q" fever two years after the initial infection. It is probable that the epidemic of so-called primary atypical pneumonia was in fact "Q" fever caused by an Italian strain of *R. burneti*.

We wish to thank Professor F. M. Burnet, Director of the Walter and Eliza Hall Institute, Melbourne, and Dr. C. H. Andrewes, of the National Institute for Medical Research, London, who gave valuable advice in this investigation. We also wish to thank Dr. R. E. Dyer and Dr. N. H. Topping, of the National Institute of Health, Bethesda, Maryland, U.S.A., for carrying out the serological tests on these patients; also Brigadier J. S. K. Boyd, lately Director of Pathology at the War Office, and Lieutenant-Colonel P. Sayers, R.A.M.C., of the War Office, who arranged to trace these soldiers after demobilization. In addition we wish to thank the many pathologists, too numerous to mention individually, who kindly helped to collect the serum from these cases. Finally, we have to thank Dr. W. E. Henley, with whom one of us has constantly consulted.

References

Adams, A. B., Staveley, J. M., Rolleston, G. L., Henley, W. E., and Caughey, J. E. (1946). *British Medical Journal*, **1**, 227.
Burnet, F. M., and Freeman, M. (1937). *Austral. med. J.*, **2**, 299.
Commission on Acute Respiratory Diseases, Fort Bragg (1946). *Amer. J. Hyg.*, **44**, 88, 103.
Derrick, E. H. (1937). *Austral. med. J.*, **2**, 281.
Feinstein, M., Yesner, R., and Marks, J. L. (1946). *Amer. J. Hyg.*, **44**, 72.
Robbins, F. C., and Rustigian, R. (1946). Ibid., **44**, 64.
Turner, R. W. D. (1945). *Lancet*, **1**, 493.

THE PLASMA VISCOSITY IN RHEUMATIC DISEASES

BY

I. C. COWAN, B.Sc., M.B.

Physician in charge of Physiotherapy Department

AND

JOHN HARKNESS, B.Sc., M.B.

Biochemist

(*From the Arthritis Clinic of Sunderland Royal Infirmary*)

In 1942 on a series of 63 tuberculous patients Miller and Whittington (1942) introduced the estimation of the plasma viscosity as a clinical test. They showed that there was a close correlation between the clinical condition and the viscosity value.

In the course of some 650 determinations which included non-tuberculous conditions the usefulness of the viscosity test was confirmed (Houston *et al.*, 1945; Harkness *et al.*, 1946). These experiments also demonstrated the complex "periodic" relationship between the plasma viscosity and the maximum erythrocyte sedimentation rate (Whittington, 1942), showing that if the viscosity is a reliable quantitative index of the clinical state then the E.S.R. is not. The conclusion drawn from that series of experiments was that the viscosity is to be preferred to the E.S.R. as an index.

While the only rheumatic condition in the series was a single case of rheumatic fever, Whittington (1946) suggested the application of the test in rheumatic diseases generally. It has recently been possible for us to apply the test in a series of patients suffering from all types of rheumatic conditions. In doing this we had as our objective the evaluation of the plasma viscosity test as an aid to the clinician in the handling of these rheumatic conditions. At this stage it may be said that the test has proved to be so useful that it is now included in the routine assessment of new patients and in following the progress of others in response to treatment.

The establishment of new treatment centres and research units indicates that rheumatic disease is at present the subject of considerable interest: this preliminary report is presented so that other workers in this field may consider including the plasma viscosity estimation among their laboratory methods.

Technique and Material

The technique of the method is discussed in the Technical Appendix (see p. 688).

The tests were performed chiefly on patients attending the physiotherapy department of Sunderland Royal Infirmary.

Table Showing Plasma Viscosity Findings in Various Conditions

Condition	No. of Tests	Plasma Viscosity*		Average Packed Cell Volume (%)	Average Wintrobe E.S.R. (mm./1 hr.)	Average Total Plasma Protein (g.%)
		Usual Range	Average of Series			
Normal	43	1·700–1·950	1·853	42·9	—	7·15
Fibrositis; myositis	10	1·725–1·950	1·896	46·3	6·7	7·34
Chronic hypertrophic osteoarthritis	17	1·875–2·075	1·921	44·1	8·5	7·31
Rheumatoid arthritis:						
Residual deformity only	8	1·740–1·990	1·909	41·8	19·8	7·40
Chronic ..	154	1·950–2·300	2·121	42·6	25·2	7·80
Subacute ..	22	2·300–2·550	2·512	40·8	36·1	8·50
Acute	16	2·500–3·400	2·897	38·8	38·8	9·54

* The plasma viscosity is the kinematic viscosity measured at 20° C. and expressed in terms of the calibration of Viscometer V5 as centipoises per g. per c.cm. or cm.^{2} per sec. $\times 10^{-2}$.

In the past nine months 320* tests were carried out on cases of rheumatic disease, 200 being cases of rheumatoid arthritis. In addition there were 43 normal controls. In all cases a thorough general medical examination was made to exclude any other pathological process apart from the rheumatic condition.

The diagnosis is the final evaluation of the findings of a team of investigators consisting of a physician, surgeon, radiologist, clinical pathologist, physiotherapist, and biochemist.

Results

In the absence of an agreed scheme of classification which would allow of statistical comparison we have grouped our cases into the crude groups of (A) rheumatoid arthritis (i) acute, (ii) subacute, (iii) chronic, (iv) residual deformity only; (B) chronic hypertrophic osteoarthritis; (C) fibrositis and myositis. (Our results for Still's disease, rheumatic fever, etc., have been omitted from the accompanying Table and from the discussion.)

We give a few representative cases in detail while outlining our findings for the series as a whole in the following general terms (see also Table):

(*a*) In the early stages of rheumatoid arthritis the plasma viscosity value may still be within range of normality, normal values may be obtained in cases which have responded to therapy.

(*b*) Progress of the disease processes is usually accompanied by an increase in viscosity, improvement by decrease; the rate of change in viscosity parallels the rate of change in the clinical condition.

(*c*) In chronic conditions there may be no change in the viscosity for several months, although the E.S.R. shows large variations.

(*d*) There is good correlation between the plasma viscosity value and the clinical picture in rheumatoid arthritis.

(*e*) The viscosity values for acute, subacute, and chronic rheumatoid arthritis tend to fall, on an average, into distinct zones of the viscosity range (see Table).

(*f*) Cases of chronic hypertrophic osteoarthritis have viscosity values in the upper range of normality and the lower part of the abnormal range (see Table).

(*g*) In fibrositis and myositis the viscosity is within normal limits.

(*h*) Our results appear to confirm that the viscosity is a more reliable index of clinical condition than the E.S.R.

Case Histories

Case 1: Chronic Rheumatoid Arthritis.—Female aged 1[illegible]. Eight years' history of pain and swelling of both knees and the proximal interphalangeal joints of the fingers, and pain and limitation of movement of shoulders. Both knee-joints were active, with effusion and increased heat. There was gross limitation of movement of the right shoulder. Medical examination revealed no other pathology. Skiagrams of the involved joints showed an atrophic arthritis and those of the chest and sinuses were negative. A catheter specimen of urine was negative on culture. Haemoglobin, 82%; W.B.C., 9,600 per c.mm.; Wintrobe E.S.R., 2 mm. in first hour; P.C.V., 45.7%; total protein, 7.81 g.%; plasma viscosity, 2.045.

Case 2: Chronic Rheumatoid Arthritis.—Female aged [illegible]. In 1944 she had pain and swelling of the right elbow-joint and the proximal interphalangeal joints of fingers which lasted for [illegible] weeks and subsided after a course of physical therapy. In November, 1946, she had another attack of pain and swelling in the interphalangeal joints of the fingers, right elbow, and shoulder-joint. Examination revealed typical fusiform swelli[illegible]

* The number of cases has now reached 450 without any alteration of the opinions expressed.

of the interphalangeal joints of the fingers, with wasting of the interossei. The elbow-joint was swollen, and movement was painful but full. There was limitation of external rotation and abduction of the right shoulder-joint. Skiagrams of the involved joints showed a typical atrophic arthritis. No focus of infection was found. Hb., 88%; W.B.C., 7,600 per c.mm.; Wintrobe E.S.R., 6 mm. in first hour; P.C.V., 44.8%; total plasma protein, 7.85 g.%; plasma viscosity, 2.034.

Case 3: Chronic Rheumatoid Arthritis.—Male aged 43. General condition very poor. Pain, swelling, and deformity of small joints of hands; swelling and increased local heat in right knee-joint; progressive loss of weight and secondary anaemia. Radiography of chest and sinuses was negative. No focus of infection or any other pathological condition was discovered on medical examination. Feb. 23, 1947: Hb., 75%; W.B.C., 10,600 per c.mm.; Wintrobe E.S.R., 5 mm. in first hour; P.C.V., 41%; total plasma protein, 8.13 g.%; plasma viscosity, 2.270. March 25, 1947: Hb., 80%; W.B.C., 8,500 per c.mm.; E.S.R., 12 mm. in first hour; P.C.V., 43%; total plasma protein, 8.0 g.%; plasma viscosity, 2.280.

Case 4: Chronic Rheumatoid Arthritis.—Female aged 32. Pain and fusiform swelling of proximal interphalangeal joints of fingers; both wrists ankylosed; pain and limitation of movement of right shoulder. The patient had been losing weight rapidly and said the pain was getting worse. Skiagrams of the involved joints showed a typical atrophic arthritis. No focus of infection was found on routine medical examination. Clinically the disease was active, and this finding was supported by Wintrobe E.S.R. of 35 mm., total plasma protein amounting to 8.1 g.%, and a plasma viscosity of 2.095. Four months later, after a period of complete rest in bed, a course of physical therapy, and 0.12 g. of "myocrisin" in weekly injections of 0.01 g., the patient had put on weight, the pain in the joints had greatly diminished, and there was increased movement in the shoulder. The plasma viscosity had now fallen to 1.935, with total protein of 7.8 g.%. The E.S.R. was still 40 mm.

Case 5: Chronic Rheumatoid Arthritis.—Female aged 58. Twelve years' history of pain and stiffness in joints. The patient now had flexion deformities of both knee-joints and was unable to walk. She no longer had pain in the joints. Clinically the disease had died out, leaving residual deformities. E.S.R., 20 mm. in first hour; P.C.V., 44.0%; total plasma protein, 7.6 g.%; plasma viscosity, 1.995.

Case 6: Subacute Rheumatoid Arthritis.—Female aged 35. Dec. 9, 1946: General condition very poor; signs of activity in small joints of fingers, in knees, and in shoulders. Skiagrams of joints revealed an atrophic arthritis; no focus of infection could be found on routine medical examination. Hb., 65%; W.B.C., 10,600 per c.mm.; Wintrobe E.S.R., 39 mm. in first hour; P.C.V., 39.0%; total plasma protein, 8.5 g.%; plasma viscosity, 2.199. Jan. 21, 1947: After five weeks of treatment, which included three weeks' rest in bed with physical therapy and five weekly injections of 0.01 g. of myocrisin, the E.S.R. was 40 mm.; the P.C.V. 40.5%; the total plasma protein 8 g.%; and the plasma viscosity 2.210. On April 30 the condition was still active and there was marked pain in knees and shoulders. E.S.R., 49 mm.; total plasma protein, 8.9 g.%; plasma viscosity, 2.259. The myocrisin was stopped after a total of 0.12 g. On May 19 the pain was subsiding and in the joints the condition was less active. E.S.R., 40 mm.; total plasma protein, 8.9 g.%; plasma viscosity, 2.250. Here the plasma viscosity increased gradually just as the clinical condition deteriorated. The E.S.R. showed similar changes, but this finding was exceptional.

Case 7: Chronic Osteoarthritis (Hypertrophic).—Male aged 50. Complained of pain in both knees; no effusion; marked crepitus in the joints; full but painful movement. Skiagrams showed the changes typical of chronic hypertrophic osteoarthritis. E.S.R., 8 mm. in first hour; P.C.V., 44.4%; total plasma protein, 7.20 g.%; plasma viscosity, 1.979.

Case 8: Chronic Osteoarthritis (Hypertrophic).—Male aged 47. In 1938 he sustained a fracture of the upper third of the right tibia involving the knee-joint. Now complaining of aching pain in the joint. No effusion; marked periarticular thickening; crepitus present; movement full, but painful on full flexion; gross wasting of quadriceps muscle. Skiagrams showed chronic hypertrophic arthritis. E.S.R., 6 mm. in first hour; P.C.V., 45.0%; total plasma protein, 7.40 g.%; plasma viscosity, 1.920.

Case 9: Acute Fibrositis.—Female aged 32. Trapezius muscle very tender and painful, with tender nodules present. Skiagrams of cervical and thoracic spine negative. Responded to five treatments with infra-red radiation. E.S.R., 10 mm. in first hour; P.C.V., 44.6%; total plasma protein, 7.8 g.%; plasma viscosity, 1.820.

Case 10: Atrophic Spondylitis.—Male aged 34. Complained of low back pain for several years. There was tenderness over both sacro-iliac joints and marked rigidity of the lumbar spine. Skiagrams showed an atrophic spondylitis. E.S.R., 15 mm. in first hour; total plasma protein, 8.0 g.%; plasma viscosity, 2.184.

Discussion

The plasma viscosity test is non-specific. It depends entirely upon the plasma proteins, ultra-filtrate experiments having shown the effect of variations in the non-protein constituents to be negligible.

With regard to solutions of the purified protein fractions, in equal concentrations the large molecules of fibrinogen have a proportionately greater effect on the viscosity than those of globulin, and the globulin in turn has a greater effect than the albumin. On the other hand, the three purified fractions appear to affect the specific gravity equally (Nugent and Towle, 1934). Thus a dual test consisting of plasma viscosity and plasma specific gravity frequently suggests which fraction, if any, is markedly increased. Accurate quantitative results cannot, of course, be inferred, for we are now dealing with the highly complex molecular interrelation of native plasma protein (Harkness and Whittington, 1947a), and at present there is no exact knowledge of the physical effects in these circumstances.

While it is not definitely known, it is believed that the liver is the organ which is chiefly responsible for these changes in the plasma proteins—i.e., the plasma viscosity test is a measure of a change in a liver function. The plasma viscosity is a measure of the change in plasma protein which occurs as part of a general systemic reaction to the disease processes in the body: the changes in the joints and soft tissues in rheumatoid arthritis are roughly paralleled by the plasma viscosity changes, indicating that there is a similar parallel systemic upset. We therefore arrive at the conclusion of earlier workers that rheumatoid arthritis is a disease of the whole organism and not merely an affection of the joints.

In striking contrast are the findings in osteoarthritis, where marked changes may occur in a joint without altering the plasma viscosity. Osteoarthritis would thus appear to be a local affection which produces little or no systemic reaction.

As results accumulated, the manner in which similar types of cases gave comparable viscosity results became striking. An apparent paradox arose with a typical osteoarthritis case whose plasma viscosity was 2.535, which was far higher than the expected value (see Table). Clinical reassessment led to the discovery of an early apical tuberculous focus. The necessity of eliminating other possible known causes of disturbance in this non-specific test is obvious.

The variation of serial results in individual cases has proved very useful in estimating progress, and it has been the means of detecting flare-up in chronic conditions. Particularly in the serial tests, the viscosity test is more reliable than the E.S.R.

The plasma viscosity test, on the basis of these first 320 results, would appear to be a promising method of investigation in rheumatic diseases. When further results are

obtained and when serial testing has been carried out for longer periods a more critical evaluation of the method will be possible.

Summary

The plasma viscosity has been estimated in 320 tests in cases of rheumatic disease and in 43 tests in normal controls. The results of these have been considered generally and some representative cases have been presented in detail.

The plasma viscosity increases with progressive disease in rheumatoid arthritis and decreases with improvement; the increase is roughly proportional to the severity of the disease process; on the whole, the viscosity values for acute, subacute, and chronic conditions tend to fall into distinct zones of the viscosity range.

In osteoarthritis the plasma viscosity values tend towards high normal and low abnormal zones.

Cases of fibrositis and myositis present normal viscosity values.

The general nature of rheumatoid arthritis as contrasted with the local nature of osteoarthritis is discussed.

We wish to thank Dr. Paige Arnold, Dr. H. A. Cookson, Dr. A. A. McIntosh Nicol, and Mr. W. Grant Waugh for their assistance in the clinical assessment of the cases of rheumatic disease.

TECHNICAL APPENDIX

In the estimation of the kinematic viscosity of plasma it is essential that the viscometer be accurate (at least to the second place of decimals) and that the viscometer be calibrated for colloidal solutions. The high degree of accuracy is necessary because changes of the order of 0.01–0.02 centipoise are clinically significant in the lower range of viscosity values.

Viscometers which measure viscosity by comparison of the time taken by fluids to flow through a capillary will give identical results for monophasic liquids such as water or benzene: with colloidal solutions such as plasma proteins, however, each instrument will give its own characteristic value, depending upon the "shear" of the capillary. In the range of viscosity usually measured in plasma viscosity tests two similar instruments may give results on the same plasma which differ by 0.3 centipoise.

Thus if the significance of viscosity values is to be general and not localized to individual hospitals some method of correlating instruments is necessary. Such correlation has been made successfully (*a*) by simultaneous estimation of the viscosity of a few plasmas in several instruments, (*b*) by the comparison of characteristic points of the individual periodic relationships between the plasma viscosity and the maximum E.S.R., as described in detail previously (Houston *et al.*, 1945), and (*c*) by comparison of the viscosity/concentration line for a solution of a pure protein with the sucrose viscosity/concentration line (Harkness and Whittington, 1947c). Methods (*a*) and (*b*) have proved satisfactory for the small number of instruments at present in use, but method (*c*) will be necessary if this test is used more widely.

All estimations here were made at 20° C. in a Whittington-type viscometer (V6). The results are expressed in terms of instrument V5, the viscometer to which all our instruments are correlated. This modification of the Ostwald viscometer requires only 0.7 ml. fluid and has an experimental error of about 0.2% only. The details of the construction, calibration, and use of this viscometer have been given previously (Houston *et al.*, 1945).

In our original technique sodium citrate solution was used as the anticoagulant, but in the present series it was more convenient to use the potassium and ammonium oxalate mixture of Heller and Paul (1934). This produces no effect on the ratio of cells to plasma as measured by the haematocrit. This anticoagulant was later recommended for E.S.R. estimations (Wintrobe and Landsberg, 1935) and for the estimation of the plasma specific gravity (Phillips *et al.*, 1945). With this solid anticoagulant fewer laboratory manipulations are required and twice as many tests can be handled daily as with the original method. Owing to the diluting effect of the anticoagulant solution the plasma viscosities of citrate plasma are all much lower than the corresponding viscosities of oxalate plasmas.

Method

Quarter-ounce (7-ml.) capped bottles are prepared for 5 ml. of blood by evaporating in an incubator 0.2 ml. of solution containing 2% potassium oxalate and 3% ammonium oxalate. To such a tube is added 5 ml. (±0.5 ml.) of venous blood, drawn without stasis. The contents are mixed by gentle rocking so as to avoid the formation of froth. In the laboratory this blood is centrifuged in a graduated tube for half an hour at 3,000 r.p.m. The viscosity estimation on this plasma can be delayed up to about four hours without error.

(a) Haematocrit: Packed Cell Volume (P.C.V.).—While the packing in the wide tube is not maximal an approximate packed cell volume can be calculated from the levels in the graduated centrifuge tube. In dealing with large numbers of tests it was found that the above standardized conditions allowed satisfactory comparison of serial results in the individual cases.

(b) Plasma Viscosity.—About 1 ml. of plasma is pipetted off and the viscosity estimation completed. This plasma can be recovered for further chemical tests.

(c) Total Plasma Protein.—This is estimated by the copper sulphate specific gravity method of Phillips *et al.* (1945). From the total blood volume as measured in the centrifuge tube the concentration of the anticoagulant can be calculated and allowed for. The plasma protein results so obtained were considered only in the full realization of the possible gross errors of the method, as we have reported elsewhere (Harkness, 1947; Harkness and Whittington, 1947b).

References

Harkness, J. (1947). *British Medical Journal*, **2**, 311.
—— Houston, J., and Whittington, R. B. (1946). Ibid., **1**, 269.
—— and Whittington, R. B. (1947a). *An. chim. Acta*, **1**, 153.
—— —— (1947b). Ibid. (in press).
—— —— (1947c). *Acta biochem. biophys. Amst.* (in press).
Heller, V. G., and Paul, H. (1934). *J. Lab. clin. Med.*, **19**, 777.
Houston, J., Harkness, J., and Whittington, R. B. (1945). *Ann. tuberc. scand.*, **19**, 153.
Miller, A. K., and Whittington, R. B. (1942). *Lancet*, **2**, 510.
Nugent, R. L., and Towle, L. W. (1934). *J. biol. Chem.*, **104**, 1.
Phillips, R. A., van Slyke, D. D., Dole, V. P., Emmerson, Hamilton, P. B., and Archibald, R. M. (1945). *Copper Sulphate Method for Measuring Specific Gravities of Whole Blood and Plasma.* Joseph Macy jr. Foundation, New York.
Whittington, R. B. (1942). *Proc. roy. Soc.* (B), **131**, 183.
—— (1946). *Brit. J. phys. Med. industr. Hyg.*, **9**, 184.
Wintrobe, M. M., and Landsberg, J. W. (1935). *Amer. J. med. Sci.*, **189**, 102.

Reading a paper on "Smoke and the Public Health" at the Annual Conference of the National Smoke Abatement Society held at Edinburgh on Oct. 1-4, Sir Alexander Macgregor said that further progress towards a cleaner atmosphere might be expected as a result of the increasing application of fuel efficiency methods in industry and in housing. In 1938, 232 tons of smoke were precipitated upon Glasgow as compared with 5 tons at Loch Katrine, and the figure for Glasgow was half of what it had been 30 years ago. In England as much as 500 tons and even 1,000 tons in one year had been recorded as falling on towns. People who worked under a smoke screen suffered in two main ways: (*a*) the direct ill effects of breathing smoke-laden air, and (*b*) the effects of being deprived of sunshine. Smoke had been held to account for some part at least of the higher mortality rates of children under 5 years from pneumonia and bronchitis in the Midland industrial area. He drew attention particularly to the screening off of ultra-violet light by smoke palls, and the necessity for offsetting this effect by adding vitamin D to children's food.

A CASE OF KERATODERMIA PUNCTATA

BY

BENTLEY PHILLIPS, M.D.

Honorary Dermatologist, Sutton and Cheam General Hospital

Keratodermia punctata is a very rare disease. The following case is a good example of it and fulfils the criteria for diagnosis postulated by Sweitzer (1923), who stated that "the true keratoderma punctatum should not show a generalized hyperkeratosis or any erythema at the edges of the lesions." Cleveland White (1930) had a similar case treated by chiropody for twelve years without improvement. My patient had been treated by a chiropodist for two months without success.

Case Report

A gunner aged 32 was admitted to a general hospital in U.L.A with a provisional diagnosis of "? multiple verrucae of hands." After examination and investigation keratodermia punctata was diagnosed. The patient had had no previous illnesses or skin disease, and had always been healthy. He was a farmer in civil life and had had four years' service as an infantryman before joining the artillery. The family history was completely negative.

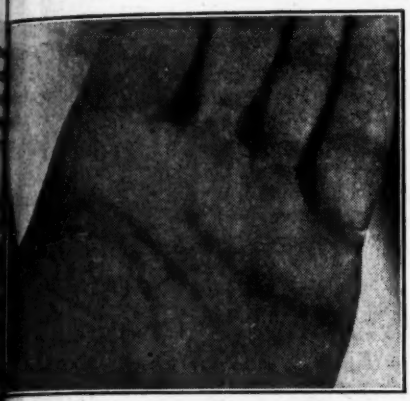


FIG. 1.—Photograph showing crateriform pits, some of which are filled with horny plugs.

FIG. 2.—Enlarged photograph of actual lesions.

Three months before admission he noticed small hard "lumps" developing in the creases of his palms and on the inner borders of his feet. There was slight pain on walking and on pressure, and the lesions were described by the patient as "plugs which remained for about a week, then dropped out, and new plugs developed." There was no history of his having taken arsenic or any other drug. He was of good physique, and nothing abnormal was discovered in any of the systems. The urine was normal; the Kahn test negative. The general skin condition was normal.

Hands.—Multiple small crateriform pits, some empty and some filled with greyish-black horny plugs, were found, entirely limited to the creases of the palms. Generalized hyperkeratosis was not present. Each lesion was surrounded by normal skin and there was no erythema. On the left hand the majority of the lesions were situated in the two distal creases. There were fewer lesions on the right hand, and a number of grouped puncta were situated at the inner end of the distal crease. This group was removed for a biopsy and the report stated: "Hyperkeratosis only. No inflammatory changes present."

Feet.—A few grouped lesions were found on the inner borders of the soles of the feet. The skin apart from these lesions was normal. There was no hyperkeratosis, clavus, or other abnormality.

FIG. 3.—Photomicrograph of one of the lesions, showing hyperkeratosis only.

The patient was treated with a keratolytic application—ung. acid. salicyl., 15%, applied thrice daily—with some improvement. He was returned to duty as there was little or no disability.

My thanks are due to Colonel H. J. G. Wells for permission to publish this paper, and to Lieutenant-Colonels F. F. Hellier and G. B. Mitchell-Heggs, O.B.E., for their interest and observations on the case.

REFERENCES

Sweitzer, S. E. (1923). *Arch. Derm. Syph.*, **8**, 687.
White, C. (1930). *Urol. cutan. Rev.*, **34**, 394.

VITAMIN K FOR THE RELIEF OF CHILBLAINS

BY

D. P. WHEATLEY, M.B., M.R.C.S.

Chilblains consist of a reaction to cold in susceptible persons. The predisposing factors in such people are assumed to be defective peripheral circulation, with increased permeability of the vessel walls and diminished coagulability of the blood. Such is the description given by MacKenna (1937). It would seem logical, therefore, to treat such a condition with a substance which will correct these abnormalities. In vitamin K we have such a substance, for in avitaminosis K the same abnormalities are present and are corrected by the administration of the vitamin.

Stewart and Rourke (1939) showed that hypoprothrombinaemia results from lack of vitamin K and that the prothrombin level in such cases could be restored to normal by the vitamin. Scarborough and Macfarlane (1942) pointed out that hypoprothrombinaemia gave rise to a delayed coagulation time, and concluded that a capillary defect might also be present in that condition. A somewhat similar state of affairs occurs in the allergic manifestation known as urticaria. Black (1945) studied the prothrombin level in a number of cases of chronic urticaria and found it diminished in 65%. He also found that the condition could be relieved by vitamin K therapy, the most marked improvement, in fact, occurring in those cases with lowered prothrombin level.

On these considerations is based the following small series of cases. Unfortunately, it was not possible to estimate

the prothrombin times in these cases; and the results are based on clinical observations alone. The prolonged spell of severe weather last winter afforded a unique opportunity for assessing the efficacy of the treatment. A commercial preparation of acetomenaphthone, synthetic vitamin K, was used throughout.

Case Reports

Case 1.—A man aged 37 had suffered from chilblains ever since he could remember. He was engaged on outdoor work, which aggravated them. He had tried numerous remedies, including calcium in various forms, a variety of ointments, and a full course of concentrated vitamin D injections, without effect. All his fingers and toes were swollen and dusky red, with signs of ulceration on several of the toes. He was given a single intramuscular injection of 5 mg. of acetomenaphthone. When seen one week later he was ecstatic, saying that for the first time he had obtained relief from his symptoms. His fingers were normal, and the toes showed only a slight residual swelling. A course of 10 mg. orally twice daily was instituted. By the end of a further week all trace of chilblains had disappeared. He was not seen again for two months, when he came up voluntarily to express his admiration of the treatment. During this time he had received no further vitamin K and had continued with his outdoor work. The chilblains had not recurred, and on examination there was no sign of any. The only symptom was a slight tingling in the toes of a few days' duration; this rapidly disappeared with a further course of the drug.

Case 2.—A Continental married woman refugee aged 30 had never had chilblains before coming to England. Now she has them all the year through, in a state of continual ulceration. She had tried all the usual treatments—calcium, vitamin D by mouth and injection, and injection of concentrated vitamin D, etc.—with no effect. All her fingers were grossly swollen, reddened, and ulcerated at most of the joints. She was given 5 mg. of synthetic vitamin K by intramuscular injection. Eight hours later the swellings had greatly subsided, although the ulcerations remained unaffected. Unfortunately the injection caused a great deal of pain, and she declined to have more. Instead, a course of 20 mg. orally twice daily was instituted. The patient was seen two weeks later, when there was some duskiness of the fingers and slight ulceration. The swellings, however, had completely subsided and the remaining ulceration was far less than it had been. In addition, there was now no irritation. A month later, however, during which time she had continued treatment, the fingers had again ulcerated and were again irritable; this coincided with the severe weather conditions. Nevertheless, the lesions were not nearly so bad as they had been at first, when the weather had not been particularly cold.

Case 3.—A married woman aged 28 had for the last seven years suffered from chilblains on her toes each winter. Last winter they had come on with particular severity and had invaded her heels and even the backs of her legs. They were present most of that season, with acute exacerbations during cold spells. When seen she was undergoing one of these exacerbations, and the back of the lower half of each leg was covered with several large, raised, reddened chilblains. They were not ulcerated, but were giving rise to intense irritation. She was given 20 mg. of acetomenaphthone thrice daily; the first dose was taken in the morning, and by the evening the irritation had ceased. Previously this had been constantly present. She was seen four days later, during which time there had been no irritation, and she was highly delighted with the result. The chilblains on her legs were still present, although there was a definite diminution in redness and swelling. Treatment was continued, and for a week she was free of symptoms. Then, however, the severe cold set in and the irritation started again, although there was no swelling, only dusky bluish patches in the skin. She was advised to continue with the treatment in spite of this setback. Unfortunately, she failed to attend again, and so further results were not known.

Case 4.—Personal observations. In this case mild chilblains occur in cold weather only. They never ulcerate, but give rise to intense irritation, most pronounced on going from a cold atmosphere to a warm one. They always clear up with milder weather. The patient, being somewhat averse to intramuscular injections, had an oral course of 20 mg. of vitamin K daily. After five days of this the chilblains had disappeared. Unfortunately this test coincided with a change in the weather, so it was not conclusive. Soon afterwards, however, the weather again became very cold, and this spell lasted for several months, and so it was possible to make more conclusive observations. To begin with, 20 mg. were taken twice daily before the chilblains had had time to develop. This did not prevent their appearance, but their onset occurred much more slowly and with much less irritation than before. After five days the doses were increased to thrice daily, and after a further five days all irritation had ceased and the swellings had almost subsided. The doses were decreased to twice daily as before, and no further trouble was experienced for three weeks. At the end of this time the irritation restarted, so doses were again taken thrice daily and the symptoms cleared in a few days. A maintenance dose of 10 mg. daily proved insufficient to prevent the recurrence of symptoms within a few days. Again these were cured by the larger doses, which were continued for the rest of the cold weather—about five weeks, during which time no further symptoms were encountered.

Case 5.—A married woman aged 21 had some moderately severe chilblains on her toes and heels last winter for the first time. These cleared up after a few days' treatment with vitamin K (20 mg. twice daily) and did not recur on cessation of treatment.

Case 6.—A woman aged 21 had had chilblains on her toes and heels every winter for the past four years. They were of moderate severity, but gave rise to such intense irritation that she dared not go very close to a fire for fear of aggravating them. She was sceptical that any treatment could give relief, but, to her surprise, after one week of vitamin K (20 mg. twice daily) her symptoms were greatly relieved and the swellings much reduced. Treatment was continued, but the patient failed to keep any further appointments.

Case 7.—A French girl aged 19 had suffered from chilblains since coming to this country several months previously. She had never had them before, and ascribed them to her inadequate diet during the German occupation. Her fingers were affected and were much swollen, but her toes were free. After one week's treatment (20 mg. twice daily) there was little improvement. For the second week bile salts were administered with the vitamin K, and there was now some improvement, the swellings being smaller and bluer. There was, however, no further improvement at the end of a third week, although she considered her symptoms to be somewhat better.

Case 8.—A man aged 46 occasionally suffered from chilblains in the winter. When seen he had moderate chilblains, together with infected corns, on his toes only. He was given 20 mg. of vitamin K twice daily and his chilblains disappeared in three or four days and did not recur, although he took only one week's course of the treatment.

Discussion

In this small series of cases the administration of vitamin K would definitely seem to have exerted a favourable influence on the condition known as chilblains. The dosage appears to vary from individual to individual, and is not related to the severity of the condition. On an average a dose of 20 mg. twice daily was found most generally useful. Again, in some cases a short course of treatment was sufficient to give protection for a long period, whereas in others it was necessary to continue the dosage to prevent recurrence of the lesions.

Howell (1941) suggested that prothrombin and fibrinogen might be constantly formed and consumed in the blood, the result being the formation of fibrin, which in some way might provide nourishment or protection for the cells of the capillary walls. It was on this assumption that the work on urticaria was done.

Might it not be that in chilblains there is a similar impairment of this mechanism, with resultant damage to the capillary walls—the cause in this case being cold rather than allergic stimulus? The individual susceptibility might

be explained by a mild hypovitaminosis-K in certain individuals. Kark and Lozner (1939) showed that this hypovitaminosis could in fact occur in adults owing to causes other than liver disease. In any case it would seem worth while giving vitamin K a further trial in this widespread and irritating condition.

Summary

The treatment of eight cases of chilblains, ranging from the mildest manifestation to severe and ulcerated forms, is described. In four there was complete alleviation of symptoms and signs, the response in Case 1 being exceptionally good. In the other four there was an improvement. Two of these patients defaulted before treatment was completed, so the final result was not known. In the remaining two there was improvement, especially of the actual chilblains, although the perniotic condition of the digits remained; and in one there was a recrudescence of symptoms in spite of continued treatment.

As regards the mode of administration it was considered that intramuscular injections were superior to the oral route. They were, however, accompanied by considerable pain, so they had to be abandoned, as the patients were not prepared to put up with this for the possible cure of their relatively minor ailment.

REFERENCES

Black, J. H. (1945). *J. Allergy*, **16**, 83.
Howell, W. H. (1941). *J. Amer. med. Ass.*, **117**, 1059.
Kark, R., and Lozner, E. L. (1939). *Lancet*, **2**, 1162.
MacKenna, R. W. (1937). *Diseases of the Skin*, 4th ed., p. 291, London.
Scarborough H., and Macfarlane, R. G. (1942). *Proc. roy. Soc. Med.*, **35**, 407.
Stewart, J. D., and Rourke, G. M. (1939). *New Engl. J. Med.*, **221**, 403.

CALCIUM DEPOSITS IN THE IRIS IN A CASE OF SECONDARY HYPERPARATHYROIDISM

BY

C. PONIEDEL, M.B., Ch.B.

Late Senior Physician, Ministry of Pensions Childwall Hospital, Liverpool

The following case is of interest for two reasons: (*a*) a review of the literature does not reveal any previous reference to such deposits in these cases; (*b*) renal calculi and metastatic calcification were absent from the kidneys.

Oliver (1939) refers to three cases of hyperparathyroidism, as follows. (i) Dawson and Struthers (1923). A man aged 49 with a long history of multiple fractures, ending in syncope and death; necropsy showed a parathyroid tumour, calcification of vessels (heart, lungs, kidney, liver, spleen). (ii) Lowenburg and Ginsberg (1932) describe the case of a boy aged 5 who received an overdose of parathormone, 100 units daily for 6 days, with resultant vomiting and listlessness after two days, followed by mental depression and high fever. Blood examination on the sixth day showed serum calcium 19.6 and blood phosphorus 4.4 mg. per 100 ml. On withdrawal of the drug the patient became normal. (iii) Hanes (1939) mentions a woman aged 49 who complained of weakness, pains in the legs, and loss of weight. Previous radiography of the kidneys, when in hospital for pyelitis, had shown diffuse fine mottling. Serum calcium was 12 mg. per 100 ml. and renal functions were markedly impaired. Five years later, on final admission to hospital, she had a tumour of the lower pole of the thyroid. Blood calcium was 20 mg., phosphorus 4.7 mg., phosphates 23 mg., and non-protein nitrogen 58 mg. per 100 ml. Skiagrams showed metastatic calcification in the kidneys and decalcification of bones. The patient became weak, depressed, and febrile, and she soon died. Necropsy showed a necrotic partly calcified parathyroid tumour.

Moore (1943) states that calcification had been reported in many organs in hyperparathyroidism, but not in bone-marrow. He mentions calcification in kidney, stomach, heart, liver, and marrow found in experiments on animals. Werner (1942) describes metastatic deposits in the kidney, and says they can occur in other organs and tissues (none mentioned specifically). He also quotes Allbright, Baird, Cope, and Bloomberg for renal calculi; and Dawson and Struthers as finding calcium infiltration in practically every organ of the body. Jaffe (1940) states that secondary parathyroid hyperplasia is found more regularly in connexion with chronic renal insufficiency than in any other condition, and that the hyperfunction becomes severe enough to induce pronounced skeletal and other tissue changes, the chief lesions being skeletal and renal (calculi). Nephrosclerosis is less common. Severe renal insufficiency is followed by calcification in soft parts (subcutaneous tissues and arteries).

Case History

The patient had a history of having been taken ill in October, 1944, while serving in the East. At that time he complained of loss of weight, loss of appetite, frequency of micturition, and looseness of the teeth. He was admitted to hospital, where the urine was found to be of low specific gravity and to contain albumin and hyaline and granular casts. Skiagrams of the kidneys, after intravenous "uroselectan," failed to reveal the outline of any renal tissue. The blood urea was 140 mg. per 100 ml.

In November, 1944, he became drowsy and the skin dry. At this period he developed a left-sided Bell's palsy; and the ear-drums were found to contain chalky deposits. Soon afterwards vision became blurred, and examination revealed a chalky deposit in the anterior chamber of the right eye and retina—choroidal atrophy. By this time the rough skin showed nodularity, which appeared to be due to chalk-like deposits. Blood examination revealed a serum calcium of 17 mg. and inorganic phosphorus of 4.3 mg. per 100 ml.; the phosphate index was normal. Radiology of the long bones showed widespread osteoporosis.

By February, 1945, the serum phosphate was 22 units (normal 3–13), and a diagnosis of hyperparathyroidism was made. Blood calcium and blood urea could be controlled temporarily by reducing intake of phosphates. The blood calcium fell to 11 mg. and the blood urea to 82 mg. per 100 ml., only to rise again in two weeks. Primary hyperparathyroidism was considered to be the diagnosis.

In June, 1945, the urine volume was 3½ pints (2 litres) daily, S.G. 1012 or less. Urea clearance was 30% of normal, and the blood urea 80 mg. per 100 ml. *X*-ray investigation showed well-marked calcification of the peripheral vascular tree in places. His general condition had improved, although wasting of the legs was extreme, and the diagnosis of primary hyperparathyroidism was thought to be incorrect because of the normal serum phosphates, absence of urinary calculi, and absence of skeletal weakness (neither fractures nor bowing of long bones).

In February, 1946, the patient was admitted to Childwall Hospital for review. On admission he complained of loss of balance when walking. He was emaciated and there were calcium deposits beneath the nails. Disks and ear-drums were as on previous occasions. In addition the irises showed fine deposits of calcium. Urea concentration was 1.3%, and faeces calcium 60% (normal reading 80% to 90%). Skiagrams of arteries showed slight calcification in the walls of the arteries of both hands, and those of the skull, spine, and long bones revealed generalized slight osteoporosis. Blood calcium amounted to 14 mg., blood urea 52 mg., serum albumin 4.5 mg., serum globulin 1.5 mg., and inorganic phosphate 3.5 mg. per 100 ml. The phosphate index was normal; there was a secondary anaemia with moderate eosinophilia. Examination of the urine showed protein 1%; sodium chloride, 6.5 mg. in 24 hours; calcium oxalate ++, hyaline casts +, and a few granular casts; red cells were occasionally present.

Progress of the Case.—Owing to the emaciation present it was considered advisable to put the patient on a fuller diet about

mid-March. His blood urea kept about 60 mg. per 100 ml. and his progress was satisfactory. However, on April 3 he was found to be strange in manner and unresponsive when questioned, and further probing showed that he was suffering from delusions. A diagnosis of uraemia was made and he was given glucose and fruit drinks up to 3 pints (1.7 litres) a day and a diaphoretic mixture; the bowels were attended to, and he also received 1/2 gr. (32 mg.) phenobarbitone s.o.s. He slept well that night and was rational the next day. The blood urea reading was 86 mg. per 100 ml. on April 3, and had fallen to 66 mg. the following day. The blood calcium was 11 mg. per 100 ml. (normal). He usually passed 20 oz. (568 ml.) of urine by day and 26 oz. (740 ml.) at night when receiving normal diet and fluids. This indicated a lack of concentrating power of the kidneys. Shortly afterwards he took his discharge from hospital against advice.

On March 8 the patient had developed auricular fibrillation, which responded to digitalis treatment, the drug being discontinued a month later. His pulse remained regular and the heart steady.

Comment

The evidence was in favour of a diagnosis of primary chronic renal disease with secondary increase of calcium in the blood. The fact that the blood calcium had become normal was against a primary hyperparathyroidism, as it is usually stated that without operation a primary condition of the parathyroid would not improve. Price mentions that hyperparathyroidism occasionally occurs as a result of chronic nephritis.

Interesting points were (1) the presence of deposits in the irises; (2) the absence of renal calculi; (3) a temporary attack of auricular fibrillation associated with uraemia.

I wish to thank the Director-General of Medical Services, Ministry of Pensions, for permission to publish this article.

REFERENCES

Dawson, J. W., and Struthers, J. W. (1923). *Edinb. med. J.*, **30**, 421.
Hanes, F. M. (1939). *Amer. J. med. Sci.*, **197**, 85.
Jaffe, H. L. (1940). *Bull. N.Y. Acad. Med.*, **16**, 291.
Lowenburg, H., and Ginsberg, T. M. (1932). *J. Amer. med. Ass.*, **99**, 1166.
Moore, R. D. (1943). *Arch. Path.*, **36**, 51.
Oliver, W. A. (1939). *St. Bart's Hosp. Rep.*, **72**, 225.
Werner, A. A. (1942). *Sth. med. J.*, Nashville, **35**, 671.

BABCOCK'S OPERATION FOR THORACIC ANEURYSM

BY

F. T. RANSON, M.B., F.R.C.S.Ed.
Shanghai

The operation described by Babcock (1926; 1932) consists of an anastomosis between the common carotid artery and the internal jugular vein of one side. Former operations for these aneurysms had used the principles of reduction of flow of blood through the sac or else the introduction of foreign bodies into the sac. Babcock's operation is based on the principle of speeding up the flow of blood through the sac and thus reducing the pressure of blood inside the aneurysm.

I have had the opportunity of performing this operation in eight cases. The patients were all male Chinese with aneurysms eroding the anterior chest wall; all complained of severe pain and all had a positive Wassermann reaction.

Method

The operation is performed as follows. Under local anaesthesia a transverse incision is made in the neck (usually right side) about 1½ in. (3.75 cm.) above the clavicle. The sterno-mastoid muscle is cut across and the common carotid artery and internal jugular vein are dissected out and cleaned. Both vessels are ligated high up, and umbilical tapes are placed around them low down so as to control bleeding. The vessels are divided just below the ligatures and the heart ends are anastomosed. After slowly releasing the tapes and seeing that the anastomosis is watertight the wound is closed.

McCarthy (1930) in an excellent detailed article on the subject discusses the hydromechanics of the operation. Half the circulation to the head is short-circuited back into the heart, and this removes the resistance of all vessels above the anastomosis. Added to the removal of this resistance is the aspiration effect exerted by venous suction. This results in lowered pressure and increased blood velocity inside the sac.

McCarthy uses the analogy of the garden hose with a weak place in its wall. If the water pressure is high and if the spigot of the hose is partially obstructed, the hose will tend to bulge at the weak spot. If, however, the spigot is opened widely, the pressure inside the hose will be reduced, the velocity of the water increased, and the bulge will tend to subside.

Results

Whatever happens inside the aneurysm, there is one striking immediate result of the operation, and that is relief of pain. This disappearance of pain took place in all but one of my cases and was remarked on by the patients immediately after release of the controlling tapes.

Of the eight patients seven left the hospital improved and relieved of pain. The eighth, who had a swelling as big as a fist on the chest wall, died of external rupture of the aneurysm five days after operation. He had not experienced any relief of pain.

In a personal communication in 1946 Babcock wrote: "I have now performed between 26 and 30 of these operations. As some have felt that the relief is due to the division of fibres connected with the carotid plexus, I have had opportunity to note the effect upon pain in four cases of large abdominal aneurysms in which an anastomosis was made between the heart ends of the external iliac artery and vein. In the abdominal cases it was possible to see the effect of the operation upon the aneurysm characterized by a prompt partial collapse of the sac immediately after the systolic wave, showing that prolonged systolic tension was not possible with the large leak back into the veins that had been established. The relief from pain was also striking, particularly in one patient who had required large doses of morphine at frequent intervals before the operation and had complete relief after operation." The operation is an easy one to those familiar with the technique of vessel suture.

At a surgical meeting in Chicago I heard the procedure described by an eminent and thoughtful surgeon as unjustified. It cannot be expected to cure the patient, but surely it is something to be able to relieve his pain, and this is often a distressful feature of these cases.

The only other operation for thoracic aneurysm of which I have had experience is wiring, but I have not observed any relief of pain with this method.

REFERENCES

Babcock, W. W. (1926). *Ann. clin. Med.*, **4**, 933.
—— (1932). *Amer. J. Surg.*, **16**, 401.
McCarthy, P. A. (1930). *Ann. Surg.*, **91**, 161.

The Central Office of Information has produced two films on child psychology for parents. The first, "Children Learning by Experience," is a study of children learning in their own way and was designed for teachers in training to provide material for discussion. The second, "Children Growing up with Other People," depicts children's development towards a balance between individualism and co-operativeness.

Medical Memoranda

Case of Traumatic Recto-Vesical Fistula

The means and methods of producing impalement of the rectum are various. It has been said that they are more common in country districts owing to accidents with pitchforks and by persons being tossed on the horns of bulls. Perforation by the ivory enema nozzle, formerly said to be common in midwifery cases, provides another type of case, which has now become rare since rubber catheters have replaced the nozzles.

Cases of traumatic recto-vesical fistula are not common. They may be followed by chronic invalidism due to persistent cystitis, pneumaturia, and diarrhoea. The case described was caused by a plant stick, and since then I have heard of another case produced by a bamboo cane supporting a tomato plant.

Case Report

A schoolboy aged 7 was playing in the garden when he slipped on some steps and sat down forcibly on a thin stick supporting a chrysanthemum plant. The stick passed through his trousers and entered the anus. The child's cry brought his mother to the spot and she took him immediately to her doctor. On examination the doctor found no bleeding from the rectum, no abdominal tenderness, and nothing abnormal on rectal examination. The child had by now recovered from his fright and did not complain of pain or discomfort. In view of this the doctor sent him home and told the mother to report should anything abnormal develop.

The boy continued in perfect health for five days. He had no pain and passed both urine and faeces normally. On the fifth and sixth days he had diarrhoea, passing loose liquid yellow motions. He also had some frequency of micturition, but there was no pneumaturia. On the seventh day the patient still had diarrhoea and now had complete retention of urine, and screamed every time he attempted to pass it. The doctor advised removal to hospital.

When first seen at the hospital the child was found to have a greatly distended bladder almost up to the umbilicus, with slight abdominal tenderness confined to the lower abdomen, and rectal examination was too painful to be carried out without an anaesthetic. Rectal examination was therefore carried out under gas-and-oxygen anaesthesia, and immediately there gushed forth a large quantity of foul-smelling yellow fluid which was obviously infected urine. When the rectum was completely emptied the walls were palpated, and anteriorly a small hole slightly larger than a quill was felt. This hole connected with the bladder. A rubber catheter was tied into the bladder and the urine drained continuously.

On the third day after admission the patient's bowels were opened normally and there was no diarrhoea. Motions continued to be normal until the seventh day after admission, when the catheter was removed; he then passed urine normally.

The patient was kept under observation for another week, during which time both urine and faeces were passed normally. There was no recurrence of the diarrhoea and no pneumaturia. The temperature had remained normal throughout, and the pulse, which was raised at first, was now restored to normal. At the end of the week the patient was discharged. Follow-up has shown that the boy continues in good health and has normal micturition and defaecation.

Comment

In view of the curved course of the rectum it is unlikely that any pointed object will enter it with force and not penetrate its wall. The clinical history and signs will vary with the size of the perforation.

In cases with small perforations, as above, inflammatory oedema may obstruct the hole: Pinnock (1937) describes a case in which the tear was neither seen nor felt. The value of proctoscopic examination, however, should not be overlooked. The only constant features of traumatic recto-vesical fistula are retention of urine and foul-smelling diarrhoea coming on about the seventh or eighth day. In cases of larger perforations these symptoms may be present from the first, but they definitely get worse at the end of the week. This is confirmed by Breyer (1933) and Galbraith (1937). Pain is not a common feature, as the mucous membrane is sensitive only for 1½ in. (3.75 cm.) up from the anus.

This case demonstrates that a small perforation may be cured by the simple means of passing a catheter and keeping the bowels confined for a few days. The catheter should be left in until the stools have been normal for four or five days. Larger tears will need more active surgical procedure.

I wish to express my thanks to Prof. A. Rendle Short, of Bristol Infirmary, for permission to publish this case.

G. S. Andrews, M.B., Ch.B.

References
Breyer, J. H. (1933). *Amer. J. Surg.*, **22**, 305.
Galbraith, W. W. (1937). *British Medical Journal*, **1**, 859.
Pinnock, D. D. (1937). *Lancet*, **1**, 205.

Traumatic Valvular Pneumothorax

The following case of traumatic valvular pneumothorax came under my care and typically illustrates the real surgical emergency of the condition. I am prompted to hope it may be worthy of record.

Case Report

During a landing exercise at sea a rating was accidentally shot through the left chest by a 0.22 bullet at approximately 150 yards range. He walked several hundred yards from the spot, returned half a mile by sampan to the ship, and unaided made his way to the sick bay, where he instantly collapsed. It was two minutes later when I saw him, supported in a chair, mouth open, and violently throwing his limbs about in a vain attempt to breathe. He was extremely cyanosed, with neck, left shoulder, and chest grossly swollen. The entrance wound was just medial to the middle of the left scapula with the exit wound directly superior to the mid-clavicular point. A rapid examination elicited an obvious subcutaneous surgical emphysema, cardiac displacement, hyperresonance, and absent breath sounds over the greater part of the left lung. Two lumbar-puncture needles, without time for aseptic precautions, were plunged into the left pleural cavity, one high up anteriorly and the other posteriorly, resulting in the immediate escape of air and an initiation of jerky respiration. Rubber dams were fixed over both wounds and multiple small cruciate incisions made in the neck and upper chest to alleviate the surgical emphysema which was helping to push the trachea over to the right and further obstruct the existing embarrassed breathing. The patient was then put to bed, propped up, and given 1/4 gr. (16 mg.) of morphine, which with reassurance and warmth soon counteracted the excitement and shock. Within half an hour he was asleep but considerably restless; breathing was shallow and regular, the cyanosis had largely disappeared, and the pulse had dropped from 140 to 90. Owing to the restlessness the needles had to be removed. Portable *x*-rays revealed a large pneumothorax and dulling of the costo-phrenic and cardio-phrenic angles.

He gradually improved for several hours, but then his condition again began to deteriorate and it was decided to perform a more elaborate operation. Under local analgesia a trocar (of copper) and cannula (a steel pin), made on the spot by the engineers, was inserted through the second intercostal space 1½ in. (3.75 cm.) from the sternum, and a thin-bore soft rubber catheter threaded through and connected to a water-sealed bottle of weak antiseptic to effect a slow continual drainage of air from the pleural cavity. By now there had developed acute abdominal pain, with tenderness, rigidity, and boarding especially in the left hyperchondrium; this was treated with hot applications. Next morning the patient felt comfortable, both chest and abdominal pain having largely subsided; breathing was easier, and in general his condition was satisfactory.

He was admitted to hospital on return from sea. Both wounds were excised and drainage was stopped after 36 hours, from which time he made an uninterrupted recovery.

Discussion

Only the smaller bronchioles could have been involved, and the initial shock must have been well compensated owing to the relatively long active interval before treatment, response to which was most dramatic and noteworthy. The abdominal pain and boarding presumably were the result of the small haemothorax irritating the diaphragm, coupled with the pressure of the pneumothorax. Fortunately no sepsis set in and the patient was discharged, fit for light duty, three weeks later with only a very small and diminishing pneumothorax present. One interesting feature is a resultant weakness of his left arm. All movements are fairly good but incomplete, and he cannot bear weight satisfactorily, although a slow improvement is taking place. There is no evidence of muscle wasting. The complication is undoubtedly the result of direct contusion of the brachial plexus by the actual bullet, in combination perhaps with some pressure involvement from the surgical emphysema.

G. S. Watson, M.B., Ch.B.,
Surg. Lieut., R.N.V.R.

Reviews

RENAL CIRCULATION

Studies of the Renal Circulation. By Joseph Trueta, M.D., A. E. Barclay, D.M., P. M. Daniel, M.B., K. J. Franklin, D.M., and Marjorie M. L. Pritchard, M.A. From the Nuffield Institute for Medical Research, Oxford. (Pp. 187; 83 illustrations. 25s.) Oxford: Blackwell Scientific Publications. 1947.

This is an unusual book, for it is written more in the form of a narrative than in that of a scientific communication. We learn of the researches (one almost said the adventures) of a team of workers who were led on from an angiographic investigation of the reaction of arteries to trauma into an intimate study of the renal circulation. We cannot escape the infectious enthusiasm of the authors as we read how they first suspected that in certain circumstances the renal blood flow might be largely diverted from the cortex to the medulla, and how the mechanism and anatomy of this shunt were investigated and demonstrated by various beautiful techniques. Fascinating pictures, faultlessly reproduced, illustrate the narrative.

This manner of presenting a major piece of research makes for easy and pleasant reading and leaves one in no doubt that the authors consider their work to be of fundamental importance. It is therefore necessary to examine their claims rather closely. In our view they are fully justified. They have demonstrated beyond any reasonable doubt the existence of a circulatory shunt in the mammalian kidney, a fact which must from now onwards be taken into account in any consideration of renal physiology and which may compel us seriously to modify our interpretation of modern clearance tests. They have shown how unlike in structure are the nephrons of the outer cortex from those of the juxta-medullary zone, and how this difference of structure must signify difference of function. They have thrown new light on the peculiar anatomy of the vasa recta and given us a glimpse into the possible purpose of their unique design. They have suggested obvious lines of approach towards the understanding of such conditions as reflex anuria, cortical necrosis, and the action of certain drugs and nervous stimuli on the kidney, the implications of which must be far-reaching.

With respect, we would offer two criticisms. The first is that the narrative style, although it is well suited to those who want instruction, is inadequate to presenting concrete information to the serious worker who would like to confirm the results and initiate new investigations. We should like to see a series of shorter papers giving protocols of experiments and more details of technique, written up in conventional scientific form. Secondly, we think the authors go too far at this stage in their claim that the shunt mechanism may explain the origin of human essential hypertension. The possibility may properly be suggested, but we think with more reserve than the authors seem to show, for much work remains to be done. Even studies of renal function and blood pressure under varying conditions of renal circulation have yet to be made. The greatest merit of this important work is that the authors propound new techniques and new ideas with which they and others will be able to pursue researches for many years to come. To say only that is high praise indeed.

ROBERT PLATT.

OBSTETRICS

Textbook of Obstetrics. By Gilbert I. Strachan, M.D., F.R.C.P., F.R.C.S., F.R.C.O.G. (Pp. 732; 323 illustrations and three coloured plates. 45s.) London: H. K. Lewis and Co.

A new textbook of obstetrics must arouse interest in these days when thought and practice in midwifery are undergoing considerable changes, and one written with the authority and experience of Prof. Strachan is opened with eager anticipation. As might be expected, it is a thoroughly sound piece of workmanship, well produced and liberally supplied with unusually good illustrations. It is more comprehensive than most books designed for undergraduates, but it conforms to the usual pattern. Dr. A. G. Watkins and Dr. R. L. Drummond contribute chapters on the newborn child and on blood transfusion respectively. The author unhesitatingly expresses his own opinions, formed after long experience, and also gives an account of many other views and methods. Throughout he lays well-merited emphasis on the need for a conservative outlook in obstetrics and on the general efficiency of natural processes. All will agree with this, and many will also approve of the orthodoxy which is a keynote of the book. Others, however, may consider that it would have been improved if it had been less traditional in some respects and if some of the older, even standard, views and methods had been subjected to criticism or had been omitted. The factual information is up to date, and so complete an account of midwifery cannot fail to attract a large number of readers, not only among undergraduates but among graduates seeking further information or studying for higher diplomas.

T. N. A. JEFFCOATE.

CEREBRAL PALSY

A Way of Life for the Handicapped Child. A New Approach to Cerebral Palsy. By Eirene Collis. With foreword by Somerville Hastings, M.B., F.R.C.S., M.P., and an introduction by Winthrop M. Phelps, M.D., F.A.C.S. (Pp. 183. 10s. 6d.) London: Faber and Faber. 1947.

Mrs. Collis, who may be regarded as the pioneer in the treatment of cerebral palsy in Britain, has performed a valuable service in writing this book, which is based on her experience over a number of years in this country and the U.S.A. The educating of these children is slow and laborious and often no appreciable results may be seen for years. Mrs. Collis points out that the team workers engaged in educating and re-educating children with cerebral palsy must possess two main qualities—namely, interest and proper humility. The team, which consists of physiotherapists, occupational and speech therapists, school teachers, and others, must approach the problem of the child as a whole, so that both the mental and bodily aspects can be dealt with at the same time. The author also rightly stresses the importance of a favourable environment for the child, since much of the good work can be undone by mishandling on the part of the parents or other guardians.

The author clearly defines the various types of cerebral palsy, and she draws attention to the means of recognizing the condition in the early years of life, for obviously the sooner treatment is begun the more benefit does the child obtain from it. She makes no extravagant claims, for, as she points out, the children are taught to "substitute." By this is meant teaching the child to do with the healthy parts what he cannot do with the injured. Faulty movements are corrected and the child is re-educated to use his muscles rightly by means of physiotherapy (which includes aids such as skis and special chairs) and occupational and speech therapy. Mental education is attended to at the same time by school work, hygiene, and removing emotional disabilities by correcting the environment.

The book can be recommended to all who are interested in this difficult problem and especially to those concerned with the education of backward and crippled children.

LOUIS MINSKI.

DEVELOPMENTS IN BIOCHEMISTRY

Currents in Biochemical Research. Edited by David E. Green. (Pp. 486. $5.00.) New York: Interscience Publishers, Inc. (215, Fourth Avenue).

In 1937 a group of investigators, all of whom had received inspiration from the late Sir Frederick Gowland Hopkins, joined together under the leadership of Dr. J. Needham and Dr. D. E. Green to produce a volume of essays of a speculative nature entitled *Perspective in Biochemistry.* This volume was published in honour of Hopkins's seventy-fifth birthday. Ten years later Dr. D. E. Green, now returned to the U.S.A., has gathered together a group of research workers who have provided "thirty-one essays charting the present course of Biochemical Research and considering the intimate relationship of biochemistry to medicine, agriculture, and social problems." In his editorial preface Dr. Green makes no reference to the earlier volume, of which, however, the present book may be regarded as a direct descendant.

The authors are almost entirely from the U.S.A., and the subjects are as follows:

The Gene and Biochemistry, by G. W. Beadle; Viruses, by W. M. Stanley; Photosynthesis and the Production of Organic Matter on Earth, by H. Gaffron; The Bacterial Cell, by René J. Dubos; The Nutrition and Biochemistry of Plants, by D. R. Hoagland; Biological Significance of Vitamins, by C. A. Elvehjem; Some Aspects of Vitamin Research, by Karl Folkers; Quantitative Analysis in Biochemistry, by Donald D. Van Slyke; Enzymic Hydrolysis and Synthesis of Peptide Bonds, by Joseph S. Fruton; Metabolic Process Patterns, by Fritz Lipmann; Biochemistry from the Standpoint of Enzymes, by David E. Green; Enzymic Mechanisms of Carbon Dioxide Assimilation, by Severo Ochoa; Hormones, by B. A. Houssay; Fundamentals of Oxidation and Reduction, by Leonor Michaelis; Mesomeric Concepts in the Biological Sciences, by Herman M. Kalckar; Viscometry in Biochemical Investigations, by Max A. Lauffer; Isotope Technique in the Study of Intermediary Metabolism, by D. Rittenberg and David Shemin; Mucolytic Enzymes, by Karl Meyer; Some Aspects of Intermediary Metabolism, by Konrad Bloch; The Steroid Hormones, by Gregory Pincus; Plant Hormones and the Analysis of Growth, by Kenneth V. Thimann; Chemical Mechanism of Nervous Action, by David Nachmansohn; Some Aspects of Biochemical Antagonism, by D. W. Woolley; Chemotherapy: Applied Cytochemistry, by Rollin D. Hotchkiss; Biochemical Aspects of Pharmacology, by Arnold D. Welch and Ernest Bueding; Some Biochemical Problems Posed by a Disease of Muscle, by Charles L. Hoagland; Physiology and Biochemistry, by Surgeon Captain C. H. Best; *X*-ray Diffraction and the Study of Fibrous Proteins, by I. Fankuchen and H. Mark; Immunochemistry, by Michael Heidelberger; Social Aspects of Nutrition, by W. H. Sebrell; Organization and Support of Science in the United States, by L. C. Dunn.

As might be expected from such a diverse group of authors the essays are of an uneven standard, but all are stimulating and sometimes provocative. Each is a survey in clear language by an expert research worker of the important developments in his own field, with some speculation on the most likely paths of future progress. It is a pity that, unlike its predecessor, this volume has no index, since the inclusion of at least a subject index would have greatly added to its value. However, the book achieves its author's aim of assisting those interested in the subject to see biochemistry in clearer perspective and in its proper relationship to other fields of inquiry. This volume is highly commended to all those who wish to learn about the present rapid developments in biochemistry.

F. G. YOUNG.

THE LOUSE

The Louse. An Account of the Lice which Infest Man, their Medical Importance and Control. By Patrick A. Buxton, C.M.G., F.R.S. (Pp. 164. 10s. 6d.) London: Edward Arnold and Co. 1947.

This new edition of Prof. Buxton's monograph will be widely welcomed. Though the first edition appeared only in 1939, recent research has necessitated increasing the size of the volume by nearly half as much again. The author presents much new knowledge of the sensory physiology of the louse and of its behaviour, particularly in relation to the host, and recently obtained information about the incidence of the insect. A useful addition is a very full account of the recent work on the insecticides such as D.D.T. which have revolutionized louse control. Prof. Buxton also includes a short account of obsolete or obsolescent methods for the sake of completeness.

It is to be hoped that the present conditions hampering the publication of medical books are only temporary. More than two years elapsed between the completion of this manuscript and the final appearance of the volume in the bookshops. Such delays are a great disadvantage to research workers waiting for new information to be made available and they must often cause a new book to be out of date before it appears. Fortunately Prof. Buxton's book has scarcely suffered in this way, for he was actively concerned with the work he describes and thus was able to include a certain amount of previously unpublished information. However, perhaps one effect of the lapse of time has been to reduce the bibliography, since the author has been unable to include references to some recent British papers on louse control whose publication was delayed by security measures. American references consequently preponderate, since there has been less hesitation in the U.S.A. about publishing information considered to be secret.

KENNETH MELLANBY.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Dr. Samuel Guthrie: Discoverer of Chloroform. By J. R. Pawling, M.D., M.A., F.A.C.P. (Pp. 123. No price.) Watertown, N.Y.: Brewster Press. 1947.

A biography, with many illustrations, of the American chemist and physician.

The Fever Bark Tree. By M. L. Duran-Reynals. (Pp. 251. 8s. 6d.) London: W. H. Allen. 1947.

The story of malaria and the search for quinine.

Skin Manifestations of Internal Disorders. By Kurt Wiener, M.D. (Pp. 690. 63s.) London: Henry Kimpton. 1947.

The author describes and illustrates with numerous photographs the skin manifestations of many internal disorders.

Bovine Tuberculosis. By John Francis, B.Sc., M.R.C.V.S. (Pp. 220. 25s.) London: Staples Press. 1947.

A monograph on bovine tuberculosis with a detailed comparison between the disease in cattle and in man.

Transactions of the Association of Life Insurance Medical Directors of America. 55th Annual Meeting. Edited by H. E. Ungerleider, M.D. Vol. XXX. (Pp. 378. No price.) New York: Recording and Statistical Corporation Press. 1947.

Includes papers on rheumatic fever, exploratory electro-cardiograms, thrombosis and anticoagulants, and peptic ulcers.

A Textbook of Gymnastics. By K. A. Knudsen. Vol. I. 2nd ed. (Pp. 384. 15s.) London: J. and A. Churchill. 1947.

The author describes and discusses the "form-giving" exercises of the Ling system.

Drugs from Plants. By T. I. Williams, B.A., B.Sc., D.Phil. (Pp. 119. 6s.) London: Sigma Books, Ltd. 1947.

An account for the general reader of some drugs obtained from plants.

Progress in Gynecology. Edited by J. V. Meigs, M.D., and S. H. Sturgis, M.D. (Pp. 552. 35s.) London: William Heinemann. 1947.

A collection of papers on recent advances in gynaecology intended particularly to refresh the minds of those returning to practice after the war.

Getting Ready to be a Mother. By Carolyn C. Van Blarcom, R.N. New English edition edited by Gladys B. Carter, B.Sc., S.R.N., S.C.M. (Pp. 311. 8s. 6d.) London: Macmillan and Co. 1947.

How to prepare for and care for the baby; intended for laymen.

Poisons: Their Isolation and Identification. By Frank Bamford, B.Sc. 2nd ed. revised by C. P. Stewart, M.Sc., Ph.D. (Pp. 304. 21s.) London: J. and A. Churchill. 1947.

Intended as a laboratory manual for chemists who have to deal with cases of poisoning.

Mental Health. By John H. Ewen, F.R.C.P.Ed., D.P.M., and C. Friedman, M.D. (Vienna), L.R.C.P.&S.Ed. (Pp. 270. 12s. 6d.) London: Edward Arnold and Co. 1947.

A brief account of mental disorder intended for the medical student and practitioner, as well as those concerned with social and educational problems.

Morphologic Hematology. Special Issue No. 1 of *Blood.* Edited by William Dameshek, M.D., *et al.* (Pp. 200. $4.75.) New York: Grune and Stratton. 1947.

Includes papers on the bone marrow, Hodgkin's disease, phagocytosis, and blood platelets.

A Textbook of Histology for Medical Students. By Evelyn E. Hewer, D.Sc. 4th ed. (Pp. 407. 21s.) London: William Heinemann. 1947.

A practical textbook for the medical student; this edition includes a new chapter on protective mechanisms.

Essays on Contemporary Events. By C. G. Jung. (Pp. 90. 8s. 6d.) London: Kegan Paul. 1947.

Includes three essays on the state of Europe to-day, and a lecture on the problems facing psychotherapists at present.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY NOVEMBER 1 1947

FOOD CUTS AND VITAMINS

Last week Sir Stafford Cripps announced that the average daily food intake per head will be less and involve a reduction of calories from 2,870 to 2,700. The Government's experts[1] have estimated that 2,700 calories "per head per day are probably too low." Energy requirements obviously differ, and what is enough for a labourer is probably too much for a clerk. Although exact knowledge is still lacking, it is probable that the intake of first-class protein is too small to allow any margin of safety. Cuts in any food items are naturally reflected in a smaller variety of dishes and an added strain on the housewife, and so probably in less efficient utilization of what food there is. The drought has reduced the milk supply, and a severe winter may once more interfere with the supply of spring vegetables. Yet we are clearly not starving, and there is little evidence that the health of the people of the country is suffering as a result of a tightened belt. With a reduced variety of food and the shortage of things like bacon, eggs, milk, and meat, the practitioner will ask himself, and will no doubt be asked by his patients, whether there is any risk during the coming winter of deficiency in vitamins. Does our present diet, in fact, leave only a small margin of safety—a margin that can be kept only by the most intelligent buying on the part of the housewife? If there is a risk of deficiency in this, that, or the other vitamin, it is a risk that can be covered by the manufacturing chemist. So that the practitioner may have available up-to-date information on vitamins, we have invited Dr. L. J. Harris to give an extended answer to a question that came in for the "Any Questions?" Section of the *Journal*. The other question that must arise in many minds is whether there will be any justification for the widespread prophylactic use of vitamins, apart, of course, from the special instances of nursing mothers and young children.

Though our diet has since 1939 been restricted, its general pattern has not been changed. Before the war our diet, on the whole, was fairly well chosen by those who could afford to choose it well, and since 1939 attempts have been made, in spite of the inevitable restrictions, to correct its faults. The main danger, if we consider only measurable quantities, has been that we should not get enough food to provide the calories we need—now at a level "probably too low."

The Ministry of Food has published[2] estimates based on the amounts of imported and home-produced foodstuffs of the average amounts of nutrients consumed per head. According to these estimates the amounts of vitamins and of iron and calcium have risen or changed but little. However, the faith of the most credulous in these statistics must be shaken by the assertion that we were eating more animal protein in 1946 than before the war. The results of surveys of consumption by representative families made each month by the Ministry of Food conform more with our experience—not unnaturally. These results are withheld from public scrutiny. However, Drummond in 1946 published the results of surveys carried out in the summers of 1943, 1944, and 1945, and from these we may estimate the average level of our diet.

Working-class families were found to be receiving about 2,700 and middle-class families about 3,000 i.u. of vitamin A a head a day. These figures are rather higher than would be expected, for a normal adult gets under 1,000 i.u. of pre-formed vitamin A; and the usual helping of vegetables, other than carrots and kale, supplies under 1,000 i.u. (if, as is now the accepted practice in this country, the vitamin A value of β-carotene is taken as 1 i.u. per 0.6 μg.). The Accessory Food Factors Committee in 1945 considered that 3,000 i.u. a day is sufficient. Although the average intake was less than this, the rations of butter and milk assured a regular basic intake; very low intakes must have been much less common than they were before the war.

There has been no danger of vitamin B_1 deficiency since white flour and polished rice were eliminated from our diet and the amount of sugar was reduced. The increased amount of niacin obtained from flour when the rate of extraction was raised has compensated for that lost by the reduced consumption of meat. With the increased liquid milk available the average intake of riboflavin has risen. In 1943–5 the average intake of these three B vitamins was more than that agreed for the new standards of the National Research Council of the U.S.A. The vitamins of the B group are found together in foodstuffs; if the food contains enough of the three major members of the group it will contain enough of any other members of the group. According to *Food Consumption Levels*[2] the average intake of ascorbic acid has been higher than before the war, but no allowance was made for losses in cooking. Since the war started the proportion of ascorbic acid derived from fruit, which is eaten raw or loses little vitamin C in cooking, has fallen, and a larger proportion is obtained from vegetables, which lose some three-quarters of the vitamin in cooking. These estimates, therefore, do not indicate the changes in the amounts actually consumed. The actual intakes of ascorbic acid were much less than the figures given in Drummond's table, because he also made no allowance for losses in cooking. During the summer and autumn, when potatoes are fairly new and fruit and vegetables plentiful, the average intakes are satisfactory. But during the first four months of the year, when the amount of ascorbic acid in potatoes is small and other vegetables and fruit are scarce, the average intakes fall very low. The amount of calcium ingested rose with the increased consumption of milk. The apparent total, as shown in Drummond's table, was about 0.1 g. above daily requirements, though about 0.1 g. of this total calcium was not absorbed because of the large amount of phytic acid in the flour. The total iron available was also more than required.

These average figures look well enough, but distribution is not even; certain groups rightly have first call on

[1] *Food Consumption Levels in the United States, Canada, and the United Kingdom.* H.M.S.O. 1944. 2s.
[2] *Food Consumption Levels in United Kingdom.* H.M.S.O. 1947. Cmd. 7203. 6d.

valuable foodstuffs. "Ordinary" adults get only 2 pints (1.14 l.) of milk a week during a considerable part of the year. They can obtain only 0.25 mg. of riboflavin a day from milk products, now the chief source, and cannot make up their estimated requirements from meat as they could before the war. They cannot get much more than 1.2 mg. a day, the limit below which signs of riboflavin deficiency may be expected. Milk and milk products have always been the chief source of calcium, but 2 pints of milk a week supply only 0.19 mg. a day. The changes in food supply since 1945 have not greatly altered our intake of vitamins. The cheese ration is now 1 oz. (28 g.) a week less, which reduces the vitamin A intake by 50 i.u. and riboflavin by 0.02 mg. a day. The cut in the meat ration reduces riboflavin by a further 0.02 mg. With the usual scarcity of vegetables and an unusual scarcity of potatoes we shall be getting very little vitamin C in the first four months of next year.

We do not know how much health will be affected by this shortage. It is true that in such studies as those of Bransby and his colleagues[3] there was no evidence that such low intakes impaired health in any way; and the effects of complete deprivation of vitamin C have been cured by daily doses of about 10 mg. of ascorbic acid. But we do know that, unless more fruit can be obtained, our average intake will be well below any of the accepted standards of requirement. With such a narrow margin of safety it may be thought advisable to take extra vitamin in the form of concentrates. There is no evidence that reasonable doses of vitamins A, D, or C can do any harm. But the implication of Marion Richards's experiments[4] is that the ingestion of large amounts of one member of the B group, while the intake of other members remains low, may induce signs of deficiency of these other members. It is therefore advisable to take supplements of the B group in the form of yeast or wheat-germ preparations, which contain all the members, rather than preparations of isolated vitamins. There is no sign that our food will become more appetizing, and the danger remains that people may eat too little simply because they do not like the food they get. There is no reason why education should not effect a change in habits, and why people should not be taught to make their food as appetizing as possible. Owners of gardens or allotments should be encouraged to grow vegetables—root vegetables if not greens—especially for the early part of the year. Flour is an important source of the B vitamins, and any attempt to interfere with its quality in order to make it whiter should be resisted.

GERMAN TROPICAL MEDICINE

During the earlier part of this century many important advances in tropical medicine were due to German research workers. Their wartime handling of various problems in this field is now revealed in a series of reports by the Combined Intelligence Objectives Subcommittee.[5] The German forces were distributed over the globe less widely than those of the British and Americans, and their main contacts with tropical diseases, notably malaria, typhus, and dysentery, were in the Mediterranean area and in South Russia. All soldiers were immunized against smallpox, typhoid, and paratyphoid A and B. Other inoculations were also given at various times—for example, against cholera on the Eastern Front in the early years of the war, until it was discovered that this infection was not likely to be widespread.

Malaria was controlled chiefly by mepacrine (atebrin). Apparently this drug was preferred as much from lack of quinine supplies as from any realization of its superior effectiveness. The dosage, based on British pre-war experience in Malaya, was fixed at 0.4 g. weekly, divided into daily doses of 0.06 g. This had no toxic effects, but it was believed to prevent only about two-thirds of the clinical malaria which would otherwise have occurred. The Australians achieved more complete suppression of malaria in New Guinea under much more severe exposure. Their greater success may have been due to the higher dosage employed (0.1 g. daily) or, perhaps more likely, to their strictness in ensuring daily administration. The Germans, in spite of their traditionally rigid discipline, could not enforce this daily dose of mepacrine with the same regularity. There was a general feeling among German malariologists that the administration of pamaquin (plasmoquin) at the end of a therapeutic course of mepacrine lowered the subsequent relapse rate. They had little convincing evidence on the subject, however, and it is doubtful whether the amount they gave (0.02 g. daily for three days) could have had much effect. Little attempt was made during the war to introduce new antimalarial drugs. Although sontoquin[6] had been discovered by the I.G. Farbenindustrie workers about 1938 and was given to some 1,000 patients during the war, there was no attempt to bring it into general use, partly because of the manufacturing difficulties, partly because it was not considered to have any great advantage over mepacrine. Sontoquin (SN 6911) is a 4-amino-quinoline compound, one of a series which has been intensively studied and developed in America, the most favoured member of the group being chloroquin (resochin, SN 7618).[7] D.D.T. derivatives were applied in the later years of the war, apparently on a limited scale, to control mosquitoes. Some clumsy attempts were also made at the Dachau concentration camp to produce immunization by semi-controlled attacks of malaria. This work, involving 1,200 prisoners, was under the direction of Dr. Klaus Karl Schilling, the eminent malariologist, who was subsequently hanged.[8]

The most important infection which the Germans had to deal with was typhus. Soon after the occupation of Poland three institutes were set up there for the preparation of typhus vaccine by means of Weigl's louse-culture technique. Smaller amounts were produced later by the mouse-lung and egg techniques (the last of which was most favoured by the British and Americans), but louse-culture provided their main supply throughout the war. "Sterile" hatched lice were maintained under semi-aseptic conditions for fifteen days. They were then inoculated with typhus

[3] Bransby, E. R., *et al.*, *British Medical Journal*, 1946, **1**, 193.
[4] Richards, M., ibid., 1945, **1**, 434.
[5] *Combined Intelligence Objectives Sub-committee Reports*, **24**, 5; **27**, 97; **28**, 55; **29**, 13, 35.
[6] *British Medical Journal*, 1946, **2**, 267.
[7] *J. Amer. med. Ass.*, 1946, **130**, 1069.
[8] *British Medical Journal*, 1947, **1**, 148.

rickettsiae by inserting a fine glass cannula into the anus. The lice were maintained for a further five days, after which the intestines were removed by dissection and used for the preparation of the vaccine. These two operations, inoculation and dissection, require highly skilled technicians. A good worker with his assistant and a dissecting microscope can inoculate nearly 1,000 lice in an hour, and can dissect up to 2,000 a day. At all stages the lice must be fed on human subjects, since non-human blood is poisonous to them. Usually the feeding is done by holding a small cage of lice against the skin. After inoculation with typhus rickettsiae the lice are infective and only immune subjects can be employed. The Institute at Cracow kept 2,000 Polish subjects for this purpose, and, as they received rather better treatment than the ordinary civilian population and obtained some protection against the Gestapo and similar agencies, there was no difficulty in obtaining volunteers. A single person can feed 10,000 lice daily, losing about 10 ml. of blood in half an hour. Material from 30 to 100 lice was required to complete the inoculation for each soldier. It was calculated that the cost of this material was about 1.8 reichsmark or about 3s. at pre-war rates. The original orders to these three institutes were to produce sufficient vaccine to immunize 2 million men in 1940. One million lice were constantly maintained at Cracow, but later there seems to have been a shortage of vaccine, for another report states that typhus immunization was used only on the Eastern Front, and then it was given only to men over 35 or to those exposed to special risks. The effectiveness of the vaccine was investigated by the S.S. on 150 prisoners, who were all infected with typhus. The disease was not completely prevented by the vaccine, but its course was much less severe and resembled a mild attack of influenza. Of these prisoners 35 had been kept as unvaccinated controls, and 33 died; the other two were fortunate in having had a previous attack of typhus. No drug treatment of typhus came into general use during the war, although a nitroacridine compound called "rutenol" was shown in the laboratory to have a marked curative action in animals infected with *R. mooseri*.

Bacillary dysentery caused much trouble, particularly in Poland in 1939 and in North Africa. Treatment by sulphonamides, especially sulphapyridine, was eventually introduced, although much later than in the Allied forces. Compulsory vaccination was given against this infection from 1942 to 1944 but was abandoned later because the results were entirely negative. Amoebic dysentery occurred to some extent in North Africa. Cases were treated mainly with di-iodoquin ("enterovioform") by mouth and by enema, apparently with satisfactory results. Emetine was not available in quantity. Schistosomiasis was of no importance for the German Army, but post-war interrogations have shown that laboratory work had produced a new chemotherapeutic remedy, "miracil," which seems promising. So far it has been tested only in animals, in which it is remarkably effective against *S. mansoni*. On the whole, these reports about German work on tropical medicine show many interesting details but few real advances in fundamental knowledge.

NOBEL PRIZE FOR MEDICINE

The Nobel Prize for medicine for 1947 will be shared between Prof. B. A. Houssay, of Buenos Aires, and Prof. Carl F. Cori and Dr. Gerty T. Cori, of St. Louis, U.S.A. The latter are receiving their share for research "on the course of the catalytic transformation of glycogens," and Houssay his share for "his discovery of the importance of the frontal lobe of the hypophysis in sugar metabolism." Professor Houssay was present at the Physiological Congress at Oxford a month ago, and the present award will be especially welcome in view of the treatment he has received in his own country. Just about a year ago Dr. Houssay, who was Professor of Physiology in the Faculty of Medical Sciences, was relieved of his post in the University of Buenos Aires. According to *La Prensa*, which recorded the fact of Dr. Houssay's dismissal, this was followed by a boycott of the physiology classes by Dr. Houssay's pupils, and by the voluntary resignation of a number of his colleagues indignant at the treatment he had received. We understand that Dr. Houssay was dismissed for political reasons. When the dismissal took place Dr. E. Braun Menéndez, Deputy Professor of the Faculty of Medical Sciences, resigned in order "to reaffirm his solidarity with Professor Houssay, recently relieved of his post, an exemplary master, who with his talent, his work in research and his self-denying dedication to his work has brought honour to the chair of Physiology in the Faculty of Medical Science of Buenos Aires and to the country, deserving without any doubt the respect of posterity." This respect has now been sealed by the award of the Nobel Prize. This year, too, Oxford University gave Houssay an honorary D.Sc. and the Royal Society made him a Foreign Member.

INVESTIGATION INTO POLIOMYELITIS

It was announced in our Epidemiological Notes (Oct 25, p. 677) that two large-scale investigations of this year's prevalence of poliomyelitis are in progress. One is a hospital inquiry undertaken by the Ministry of Health in order to secure more accurate estimates of the fatality and severity of the disease in the present epidemic. The number of cases confirmed as poliomyelitis may be smaller than the number of notified cases, for it has been estimated in some places that one-third or even one-half of those notified were not in fact cases of poliomyelitis.

The other investigation is being carried out by medical officers of health in certain areas. It has been organized at the request of the Ministry of Health by the Public Health Laboratory Service, which is directed by the Medical Research Council. It was initiated in the counties of Berkshire, Buckinghamshire, and Oxfordshire, where orthopaedic out-patient clinics are provided by the Wingfield-Morris Orthopaedic Hospital, Oxford. The plan in these counties is to undertake an epidemiological investigation of cases of poliomyelitis and polio-encephalitis during 1947 and the next few years. A questionary was drawn up on the basis of the one used in the Mauritius epidemic by McFarlan, Dick and Seddon,[1] and the help of the Institute of Social Medicine was enlisted to ensure that the data would be collected in a form suitable for analysis on the Powers machines there. The questionary covers some social and environmental factors as well as such details as age, sex, date and place of onset, and possible source of infection. After completion of the field investigation by the medical officer of health the forms are sent to the Public Health Laboratory, Oxford, where they are examined for any suggestion that cases in different districts shared a

[1] *Quart. J. Med.*, 1946, **15**, 183.

source of infection which was not evident in the individual cases and which deserves further investigation. The forms are then sent to the hospital, where the diagnosis is checked and some clinical details are recorded. Finally the forms are sent to the Institute of Social Medicine for analysis. The same questionary is being used by medical officers of health in some other parts of the country for a survey of their cases with such arrangements for the completion and collection of the forms as suit local conditions. It is expected that the pooling of accurate data from several health districts will yield information which cannot be obtained from individual districts, particularly if cases are few. In some areas which are participating in the survey independent inquiries are being made, and it is to be hoped that the results of these and other investigations will be published as early and as fully as possible.

It is encouraging to know that many people are endeavouring to record the epidemiological features of the 1947 prevalence of poliomyelitis in England and Wales and in Scotland. Virus work on selected cases is being done at the Central Virus Laboratory of the Public Health Laboratory Service, and clinical studies may be expected in addition to those published by Kelleher[2] and McAlpine[3] Accurate observation and documentation provide the data on which sound epidemiological theory and reasonable preventive measures must be based.

CENTENARY OF CHLOROFORM ANAESTHESIA

The ill luck and indeed tragedy that clouded the lives of many who played a part in the discovery of anaesthesia were misfortunes that James Young Simpson was fortunate enough to avoid. The centenary of his discovery of the anaesthetic properties of chloroform is the subject of an article at p. 701 by Dr. Douglas Guthrie. About a year ago Morton's demonstration of the anaesthetic properties of ether in 1846 was commemorated in different parts of the world and was the subject of articles in this *Journal*.[4] Since then the story of anaesthesia has been told by various authors.[5-7] Henry Hill Hickman, who experimented on inhalational anaesthesia in 1824, was rejected by his contemporaries and died at the age of 30. John Elliotson, who hypnotized his patients—or, as he put it, mesmerized them—into insensibility was forced by the action of the Council of University College Hospital to resign from his post as physician. Crawford Long gave ether as an anaesthetic in 1842, but escaped fame by not publishing what he did. Horace Wells in 1844 showed that with nitrous oxide teeth could be extracted painlessly, and a year later was unsuccessful when he tried to demonstrate the anaesthetic properties of nitrous oxide in the Massachusetts General Hospital. The quarrels over priority between Wells, Morton, and Jackson unhinged Wells's mind, and after being sent to prison for throwing acid on the clothes of some New York streetwalkers he committed suicide in 1848. C. T. Jackson, who tried to "jump the claims" of Morton, ended his life in a lunatic asylum. Morton himself, who was the hero of the celebrations last year, finally became mentally unstable and died in hospital a short time after he had plunged into a lake.

James Young Simpson, of tougher fibre, came through the ordeal of discovery with flying colours, though he, too, had his fair measure of fierce opposition—an opposition which fittingly in Scotland was based on biblical evidence. But Simpson did not discover chloroform, which was first produced in 1831 by Guthrie in America, Soubeiran in France, and Liebig in Germany, each working independently. According to J. R. Pawling,[7] Guthrie was the first of these three to produce chloroform. He thought it might be valuable as a medicine, but seems to have been impressed by its virtue as an intoxicating drink. It became known locally as Guthrie's "sweet whiskey," and in a letter to his daughter in February, 1848, he wrote: "I could have made a fortune if I had gone to New York as I was urged last fall by making sweet whiskey. . . ." Simpson, who had used ether to relieve the pains of childbirth, was constantly on the lookout for a new anaesthetic, and the hint that chloroform might be worth trying was made to him by Dr. David Waldie; with Keith and Matthews Duncan, Simpson sniffed the vapour from tumblers in his room at 52, Queen Street, Edinburgh, on Nov. 4, 1847. Simpson's account of his use of chloroform as an anaesthetic was published at about the same time in the *Lancet*, the *London Medical Gazette*, and in the *Provincial Medical and Surgical Journal* (the precursor of the *British Medical Journal*). But Simpson seems to have been preceded by others.[5] In the summer of 1847, for example, William Lawrence, surgeon to St. Bartholomew's Hospital, was practising with a new anaesthetic agent called "chloric ether," a solution of chloroform in alcohol, but he published no account of his experiments. And still earlier Jacob Bell, in a footnote in the *Pharmaceutical Journal*, noted the use of "chloric ether" as an anaesthetic in February, 1847—apparently it was tried at the Middlesex Hospital. In February, 1847, too, Flourens anaesthetized "an animal forced to breathe the vapour of chloroform." It is, therefore, not accurate to describe Simpson as the discoverer of the anaesthetic properties of chloroform. Nevertheless, his vigorous advocacy of this drug and his energetic campaign for the relief of the pains of childbirth secure him an unassailable place in the history of anaesthesia. And in acclaiming him for this we should not omit to mention the man who introduced the scientific method into anaesthesia and who gave Queen Victoria chloroform at the birth of two of her children—John Snow, whose portrait Barbara Duncum has put as a frontispiece to her valuable book.

CARCINOMA OF THE PENIS

The subject of cancerous and precancerous lesions of the penis has recently been reviewed by Melicow and Ganem[1] in connexion with a report of 23 cases. The essential features of cancer of the penis are well known. It is not a common disease; it occurs chiefly after middle life, and it is almost unknown among Jews who practise ritual circumcision. The cancerous process may be secondary to some antecedent local disease such as leucoplakia, the erythroplasia of Queyrat, Paget's disease, or Bowen's disease. The exact importance of such antecedent disease is difficult to determine, and in only two of the 23 cases now reported was there histological proof of its existence. An associated phimosis and infection are present in the majority of patients who develop cancer of the penis, and in fact chronic balanitis in middle life should be regarded as a potentially malignant condition. The precise effect of the retained and infected smegma is uncertain, but it may be that on decomposition it produces carcinogenic hydrocarbons or sterols. Bowing, Fricke, and Counseller[2] reported an antecedent recent circumcision in 34.8%

[2] *British Medical Journal*, 1947, **2**, 291.
[3] Ibid., 1947, **2**, 668.
[4] Ibid., Oct. 12, 1946.
[5] *The Development of Inhalation Anaesthesia*. Barbara M. Duncum. 1947. Published for the Wellcome Historical Medical Museum by Oxford University Press. Price 35s.
[6] *Victory over Pain. A History of Anaesthesia*. Victor Robinson, M.D. Sigma Books, London. Price 16s.
[7] *Dr. Samuel Guthrie, Discoverer of Chloroform*. J. R. Pawling, M.D. 1947. Brewster Press, Watertown, New York.

[1] *J. Urol.*, 1946, **55**, 486.
[2] *Radiology*, 1934, **23**, 574.

of their series of 195 cases of carcinoma of the penis, but the probability is that the malignant process was actually present at the time of the circumcision. In this connexion an unhealing circumcision scar in an adult should always be viewed with suspicion. The local penile disease usually starts on the glans at the corona, either as an external papillary excrescence or as an indurated ulcer, and it may have been preceded by a precancerous lesion which was not discovered on account of the phimosis. The lymph drainage is into the superficial inguinal glands, the deep inguinal glands, and the external iliac glands, and owing to the free anastomosis of the penile lymphatics there may be deposits in the inguinal glands on the opposite side to the primary lesion. The urethra is involved only in late cases, and abdominal metastases are rare. The disease may also spread by extension via the dorsal vein of the penis.

Diagnostic difficulties may be great on account of the association of phimosis, balanitis, and cancer, and at times it may be impossible to determine clinically whether or not a malignant process is actually present. Biopsy of the primary growth or biopsy of the inguinal glands by puncture may be useful if frozen sections are available and immediate operation can be carried out. There is still considerable difference of opinion on the best method of treatment, but the treatment in the individual case must be determined by the patient's age, the size and nature of the lesion, the involvement or not of the corpora cavernosa, the presence of inguinal metastases, and the importance and site of any superimposed infection. Partial or complete amputation of the penis with bilateral resection of the inguinal glands is the method of choice. The safety of the operation should be greatly increased by modern methods of controlling infection. Local recurrence of the penile growth is unusual. There is still, however, great difference of opinion on the value of irradiation in treatment. Circumcision and personal hygiene are the only two prophylactic methods which are likely to reduce the incidence of carcinoma of the penis, but there will be no general support for the authors' contention that routine circumcision should be carried out in babies in order to prevent the development of penile cancer.

INDIUM

The high price of indium still limits its application, but the entire world stock, which exceeded 2 tons in 1934 and was chiefly held in America, has been considerably augmented since 1940, and its use in electroplating, as a constituent of alloys for dental prosthesis, in jewellery manufacture, and in the radio and television industry may extend greatly in the coming years. Animal experiments have already shown that given by mouth its toxicity is low. The dosage for man equivalent to that which produces poorly defined subnormal states in animals would be about 123 gr. (8 g.), but the quantity of indium which dissolves in acids makes its use in metal food-containers undesirable.[1] Its irritant property, as tested on human skin by the wearing of indium-treated silver plates, is not sufficient to constitute any industrial hazard.[2]

It is toxic, however, when injected into animals subcutaneously or intravenously. If amounts sufficient to cause death are injected the organ most severely affected is the liver, and there is evidence also of renal damage. In some recent animal experiments,[3] where the dosage given produced "subacute" poisoning allowing survival of the animals for three to six days, the lesions observed were selective, affecting the liver, kidneys, heart, and submaxillary glands, but sparing the pancreas, testes, suprarenals, brain, and parotid glands. The type of lesion was not less specific—the degeneration was hyaline and parenchymatous in character, never fatty or pigmentary. Thus, in the liver the hyaline degeneration, leading eventually to necrosis, was sometimes vesicular or hydropic. In the kidneys some of the tubules were completely necrosed while others remained unaffected. In the heart the characteristic lesion was hyaline transformation of the striated muscle fibres. Only rarely, as by contact with lacerated tissues, will the effects of indium on man be in any way comparable to those noted in animals receiving subcutaneous injections. Yet because such conditions might occur in industry, indium cannot be dismissed as completely harmless, and it is useful to know what lesions might be produced in the remote eventuality of gross overdosage.

[1] Harrold, C. G., Meed, S. F., *et al.*, *J. Industr. Hyg.*, 1943, **25**, 233.
[2] McCord, C. P., Meek, S. F., *et al.*, ibid., 1942, **24**, 243.
[3] Vignoli, Poursines, *et al.*, *Arch. Mal. Profess.*, 1946, **7**, 356.

TREATMENT OF UNDULANT FEVER

Undulant fever is one of the diseases the treatment of which has been little, if at all, affected by the introduction of sulphonamides and antibiotics. There have, indeed, been reports of recovery after sulphonamide therapy, but in many other instances it has proved ineffective, and the recoveries were probably coincidental. The experimental administration of sulphonamide drugs to infected guinea-pigs has shown that they can eliminate the infection, but only when given in doses so large as to approach, or pass, the toxic level.[1 2]

Huddleson,[3] however, has recently reported that when non-inhibiting high dilutions of many sulphonamide compounds are added to liquid culture medium containing Brucella sensitizing antibody in high dilutions and complement then the organisms are inhibited and killed. This occurs not only *in vitro* but also *in vivo*. Guinea-pigs infected with Brucella organisms can be freed of infection by the oral administration of normal doses of sulphonamide drugs combined with the injection of weak antiserum, such as normal rabbit serum. From the serum of animals so treated Huddleson has isolated the sulphonamide drug and the antibody in combination, and he believes that the effect of the drug is to potentiate the bactericidal action of antibody plus complement.

It is a little difficult to understand why an injected weak antiserum, potentiated by a sulphonamide drug, should have a bactericidal effect, while the serum of an infected animal or man, often of a high agglutinating titre, has not. Huddleson explains this on the basis of the Neisser-Wechsberg phenomenon—a serum may be bactericidal in high dilution yet not in low dilution. Having successfully treated infected animals, Huddleson applied the method to four patients suffering from undulant fever. They had all been ill for a considerable time and were being given sulphonamide drugs. He advised that the dosage should be reduced and that they should be given blood transfusions. No special care was exercised in the selection of the donors, it being assumed that all normal human blood contains bactericidal Brucella antibody. The treatment was carried out and the four patients soon recovered.

Huddleson's observations may prove of fundamental importance and have wide application. Meanwhile it would be of interest if others would repeat, and report on, this suggested treatment of undulant fever. The administration of small doses of sulphonamide drugs (sulphadiazine or sulphamerazine is recommended) together with blood transfusion can hardly do harm, and any treatment which holds out a hope of cure of this refractory disease is to be welcomed.

[1] Wilson, G. S., and Maier, I., *British Medical Journal*, 1939, **1**, 8.
[2] Ibid., 1940, **1**, 47.
[3] Huddleson, I. F., Communication to the Fourth International Congress for Microbiology. Copenhagen, July, 1947.

CENTENARY OF CHLOROFORM ANAESTHESIA

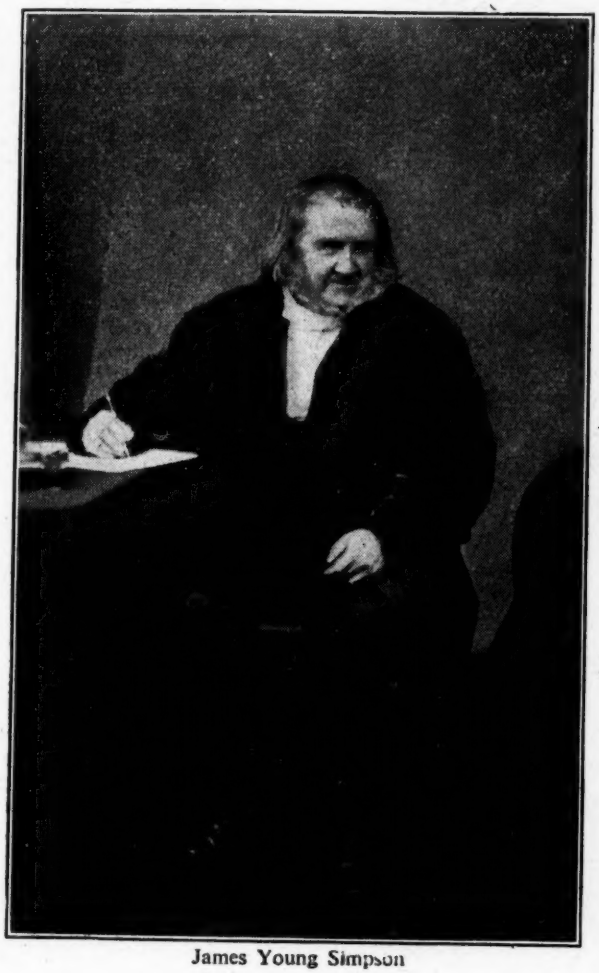
BY

DOUGLAS GUTHRIE, M.D., F.R.C.S.Ed.

Lecturer on History of Medicine, University of Edinburgh

A year ago the birthday of ether anaesthesia was duly and fitly celebrated the world over. The discovery in 1846 of ether as an anaesthetic was the climax of an age-long search. That it was so long delayed is truly remarkable. Many a time down the ages it had been so nearly found. There had been the nepenthe of Helen of Troy, which brought forgetfulness of every sorrow; the mandragora of Dioscorides, which remained in use until the Renaissance; the physical methods, such as pressure on nerves or freezing, which have been strangely revived in modern times; and the mesmerism for which John Elliotson fought so hard and which was the favoured line of anaesthetic research at the time when ether appeared on the scene and, in the words of Robert Liston, "beat mesmerism hollow."

In a few days the birthday of chloroform anaesthesia will be celebrated, and some may wonder why we should not simply honour the American pioneers of ether anaesthesia, and leave it at that. Was not chloroform simply another anaesthetic? Yes, but it was more. Just as Lister discovered not carbolic acid but the antiseptic method, so did Simpson, eighteen years earlier, discover not only chloroform anaesthesia but an anaesthetic method. Anaesthesia became a science under Simpson's guidance.



James Young Simpson

James Young Simpson

It is advisable to give some account of his life work, familiar as it must be to many readers. Born at Bathgate, Linlithgowshire, in 1811, James Simpson was the son of a baker whose family was large while his resources were small. Jamie seems to have been an unusually bright child, filled with that insatiable curiosity and desire for knowledge which marked the youth of John Hunter and many another genius. The family resolved that Jamie should have a good education, and from early boyhood he was marked for the medical profession. He was still a youth when his parents died, but the paternal care was continued by his elder brother Sandy, while his sister Mary became to him a second mother. When he entered Edinburgh University he was "very poor, very solitary, and almost friendless," but he soon showed his worth, graduating M.D. in 1832. An incident of his student days turned his attention to anaesthesia: it was during his attendance at an operation—and very little imagination is required to enable one to picture the horrors of surgery without anaesthesia and the agony endured by the central figure on the table. James Simpson's whole soul revolted at the sight as he left the Infirmary and sped towards Parliament House, resolved to exchange the profession of medicine for that of law. Success would have followed him there, or indeed anywhere. On second thoughts, however, he determined that he would try to relieve pain instead of running away from it. The opportunity was soon to come. It was John Thomson, the professor of pathology, whom he assisted, who suggested to Simpson that he might do well to specialize in obstetrics. Thomson himself had tilled many fields—anatomy, military surgery, and then pathology. He had been the first professor of each subject, and it is not surprising that Knox, the tragic anatomist, called him "the old chair-maker." A few years later the chair of midwifery fell vacant. Simpson had set his heart on it, and he was well prepared. Many thought him too young, and on hearing this he determined that he would indeed be young. On an impulse he sat down and signed his application James *Young* Simpson.

Appointed to the chair by the majority of a single vote, he now entered upon his duties with characteristic energy and enthusiasm. Soon he became recognized as the leading British obstetrician. His classroom attracted many students; his house was filled with those who came for healing and those who came to learn. To all of them he accorded generous hospitality.

David Waldie

All this time he was preoccupied with the mystery of pain, for which as yet there was no remedy. When the news of the American discovery reached him, he told his brother that it was "a glorious thought" and that he "could think of naught else." In January, 1847, he was the first to use ether in obstetric practice. But before long it was apparent to Simpson, as to many others, that the ideal anaesthetic had not been found. Ether was slow and uncertain in action, it was often irritating to the air passages, and special apparatus was required for its administration. Something better might be discovered, and Simpson resolved to discover it. His method was the simple one of self-experiment, his assistants also lending their aid as subjects for the trial of various drugs. All Simpson's friends were aware of his quest, and many suggestions were offered. Dr. David Waldie, a Linlithgow lad who had become a chemist in Liverpool, thought that chloroform might be worth trying, and Simpson acknowledged this hint and acted upon it. There is no evidence to prove that Waldie made any experiments on his own account, and certainly he published no results, but he deserves honour for his suggestion. Another share of the credit is due to Simpson's assistants, Keith and Matthews Duncan. For several months before the discovery the trio used to meet in Simpson's dining-room at 52, Queen Street, after their day's work, in order to inhale, from no apparatus other than simple tumblers, all manner of likely and unlikely vapours. It was a bold venture, and it is not surprising to learn that Simpson's next-door neighbour, Prof. James Miller, would often look in at breakfast-time "just to inquire if everyone was still alive."

The Experiment

On the evening of Nov. 4, 1847, after several useless efforts, there was produced from a waste-paper basket, so it is said, a little bottle of chloroform which had been prepared by Prof. William Gregory, as Waldie's promised sample had not arrived. It looked heavy and involatile, but Simpson poured a little into his tumbler. He was too well aware of the risks to permit a simultaneous experiment by all three observers. Very soon Keith and Duncan noted the effect on their chief. They too

sniffed the vapour from their tumblers, and soon all were unconscious, Duncan snoring loudly and Keith, having slipped from his chair in the stage of excitement, kicking at the table legs. Naturally, Simpson recovered first, fully aware that he had discovered something "far stronger and better than ether." And so indeed it proved. Within a short time chloroform had

"Anaesthesia" at the age of 17. The first child to be born while the mother was under the influence of chloroform administered by Prof. J. Y. Simpson.

displaced ether and had become the anaesthetic of choice all over the world, save perhaps in the northern States of America, the original home of ether.

Of course Simpson never claimed to have discovered chloroform, nor did he claim to be the first to use general anaesthesia. The substance chloroform was first produced about 1831 by Guthrie in America, Soubeiran in France, and Liebig in Germany, each chemist working independently of the others. Since then it had been used as an internal remedy; indeed it is so used to this day.

Simpson was, however, the first to demonstrate the anaesthetic properties of chloroform. Within a week of his discovery, on Nov. 10, he read a paper to the Medico-Chirurgical Society entitled "An Account of a New Anaesthetic Agent as a Substitute for Sulphuric Ether in Surgery and Midwifery." The contribution was printed and published on Nov. 15, by which time Simpson was able to add notes on the employment of chloroform anaesthesia in three cases at the Royal Infirmary. The first patient was a Highland boy who could speak only Gaelic. His name is unfortunately not known to us. From his arm Prof. Miller removed a large sequestrum of the radius, Simpson acting as anaesthetist. It was natural that Simpson should also introduce chloroform into obstetric practice. The first child whose mother enjoyed its beneficent influence was the daughter of a Dr. Carstairs, of Edinburgh, who was duly christened "Anaesthesia." Her career cannot be traced, but a photograph of her at the age of 17 stood on Simpson's desk and he called her his patron saint, "St. Anaesthesia."

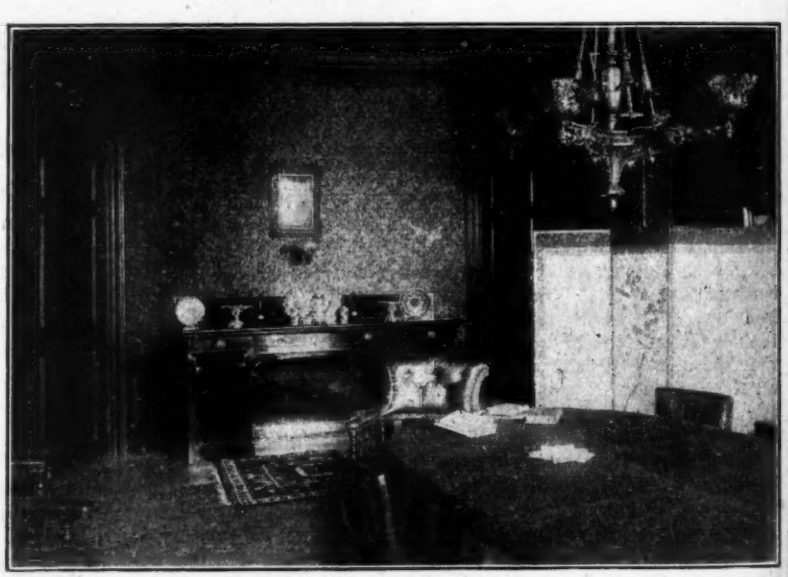
John Snow

It now seemed as though chloroform would fulfil the anaesthetic ideals of efficiency and safety. "Never mind the pulse, but watch the breathing carefully," was the watchword of Simpson and his disciples. Lister wrote a most valuable paper on chloroform anaesthesia, which is still well worth reading, and he stated that Syme had performed five thousand operations under chloroform without a death which might be attributed to the anaesthetic. Lister's paper appeared in 1861. But long before that date a disquieting series of deaths had been reported from various quarters, and the safety of the new anaesthetic had been called in question. Attention was now turned to the need for accurate dosage to replace the somewhat haphazard "rag and bottle" method.

Among those who promoted the safety of chloroform administration by new dosimetric methods was John Snow, who had already won fame by proving that cholera was a water-borne disease. Turning his attention to anaesthetics, and especially to chloroform, he was the first in Britain to limit his practice to anaesthetics, and it was he who administered chloroform to Queen Victoria at the birth of Prince Leopold and subsequently of Princess Beatrice. The name of Snow well deserves to be linked with that of Simpson. Although chloroform lost some of its popularity when its safety was questioned, it retained its place as the principal anaesthetic until the turn of the century. Indeed, the words anaesthesia and chloroform became synonymous, and the verb "to chloroform" was in constant use. As time went on, the use of ether was revived. There was a contest between ether and chloroform; new mixtures, new sequences of other vapours and gases, were used; premedication by various narcotics came into fashion, and anaesthesia gradually became one of the most exact and precise of the medical specialties.

Simpson the Many-sided

Of the modern position of chloroform in anaesthetic practice I am not qualified to express an expert opinion. No doubt the Centenary Celebration to be held in Edinburgh next week will call forth opinions regarding chloroform as used to-day from expert anaesthetists who can speak with authority. But perhaps one may be allowed to conclude this note by a few further remarks on the discoverer, Sir James Young Simpson, who became the first Scottish medical baronet in 1866, four years before his death. Although chloroform anaesthesia was his greatest achievement, it was by no means his only claim to distinction. He wrote voluminously on homoeopathy, on "hospitalism"—his suggestions have quite a modern flavour—and on many another subject. In his promoter's address at the Edinburgh Graduation Ceremony of



Room at 52, Queen Street, Edinburgh, in which anaesthetic value of chloroform was discovered.

1868, he remarked that "by means of electric lights the human body might one day be rendered transparent. "Thus he prophesied Roentgen's discovery. Simpson's greatest campaign, and one on which he laid much stress, was his advocacy of a means of controlling haemorrhage by means of needles, so as to avoid the silk ligature which promoted and perpetuated sepsis. Acupressure, as he called it, brought him into conflict with surgeons, who resented his encroachment upon their domain. The introduction of the antiseptic method, strangely enough, was opposed by Simpson, who asked Lister to show his "mythical germs." Nevertheless this method led Lister to introduce the catgut ligature. There was then no need for acupressure, and soon it was entirely forgotten. The versatile outlook and abounding energy of Simpson could not be limited by his own specialty of midwifery, although he advanced that science in no small way. Nor did he limit his investigations even to the wider field of medicine and surgery, although he contributed to both.

In some strange fashion, amid the claims of a huge practice and of many medical interests, he found time to establish himself as an authority on archaeology. His essays may still be read with interest—on Scottish charm stones, on medical officers in the Roman Army, on leprosy in Scotland, to mention only three, written with a conviction that reveals his wide and varied store of knowledge.

Simpson believed in living strenuously. But even his happy possession of the ability to fall asleep at any time or in any circumstances did not altogether relieve the heavy strain imposed upon his sturdy frame. He fell a victim to coronary thrombosis, "the doctors' disease," and died in his fifty-ninth year. He earned the gratitude of many a sufferer, and it is fitting that he should be remembered to-day and honoured for all that he did, especially in his great service to the science of anaesthesia one hundred years ago.

A METHOD OF ABDOMINAL PALPATION

BY

E. W. PRICE, M.B., B.Ch., D.T.M.

Pimu Mission Hospital, Belgian Congo

The conventional method of abdominal palpation, with the patient supine with (or without) the legs drawn up and with (or without) a cushion under the shoulders, though generally sufficient, is sometimes difficult on account of the tonicity of the abdominal muscles, the amount of fatty tissue, or the inability of some patients fully to relax the abdominal wall. This inability may be the result of nervousness or misunderstanding, or even a desire to be helpful. Moreover, the placing of the hand beneath the lumbar region for palpation of the kidney often causes the patient to lift himself in a desire to help, though actually it makes palpation more difficult.

In tropical practice, where patients are more numerous, the time taken in explaining to an uneducated native that he must lie on the couch, on his back, and not keep lifting his head to see what is being done, is another disadvantage; besides which, a chair or table is not always available in itinerant practice, and the native bed is too low for convenience. The alternative—of laying patients on the ground—is tiring if there are many to examine.

Such considerations led to a search for a method which would assure complete relaxation of the abdominal wall, which would dispose of the need for a table or chair, and which would avoid the time spent in placing the patient suitably on a table for examination. The thick fatty abdominal wall common in European practice is relatively uncommon in Africa. The method to be described was suggested first by remarking the ease with which one can examine the spleen of a child if he is made to bend forward and hang the head down. Nicholson's method (of restraining thoracic respiration with one hand) has the disadvantage of maintaining one hand in a state of muscular tension while trying to palpate with the other. Marshall (1933) described a "dangle" method similar to that of the palpation of the spleen referred to, but with the patient seated and the surgeon standing behind.

The following method is recommended because of the complete relaxation afforded, the fact that neither chair nor table is essential, though a chair is useful, and because an uncooperative patient, breathing normally, cannot contract his abdominal muscles in this position and thus frustrate the examination.

Details of Procedure

The examiner stands on the patient's right, and instructs him to bend forward with his arms and head dangling down. The patient may be standing or sitting. The examining hand (the right) is passed between the hanging right arm of the patient and his abdominal wall, then right across the abdomen until the left anterior superior iliac spine is felt. It is much easier in palpating to pull the hand back than push it forward. The left hand is placed on the patient's back opposite the palpating hand and its position changed with that of the latter. This hand serves to steady the patient and also to act as counter-palpation to the hand on the abdominal wall.

The routine examination is as follows: Starting at the left anterior superior iliac spine, the hand is drawn inwards and upwards along the iliac fossa to palpate the iliac colon and iliac glands. The ureter is sought (and is often palpable in thin patients) at the pelvic brim (Tourneux's point). Returning then to the iliac colon, its course is followed upwards to the subcostal region. The left hand then pushes forward in the left costo-vertebral angle to facilitate palpation of a kidney. One then feels for the spleen. Crossing the upper abdomen, the right lobe of the liver is palpated beneath the costal margin, and often one can flip it across the fingers and so estimate its consistency, size, and surface. This examination is made easier if the fingers are hooked under the costal margin. The region of the gall-bladder is also palpated. The left hand, which has followed the right across to the patient's right, now presses forward with a view to palpation of a kidney, and the right colon is then followed down to the caecum, and the right ureter is also sought. Finally the examining hand is replaced across the lower abdomen and the suprapubic and the inguinal regions palpated. In a lax abdomen with thin walls it is often possible to pass the fingers into the pelvis from above, giving the sensation of putting the hand into a basin covered with a blanket. If necessary, the examination can be completed with a bimanual examination of the prostate.

Comment

The advantage of this method, apart from those stated above, is that the whole abdominal palpation is bimanual, allowing thus for a more definite impression of the consistency and extent of any palpable structure. The simple downward palpation of the conventional method fails somewhat to assure this, in that the counter-pressure is made by the inert couch.

REFERENCE

Marshall, C. Jennings (1933). *British Medica Journal*, 1, 413.

DEAF-MUTISM IN SWITZERLAND

Prof. Ernst Hanhart, of the University of Zurich, who has been working for many years on problems of genetics in certain selected Swiss populations, paid his first visit to England on Oct. 7 to deliver the Galton lecture—the first for eight years—at University College, London. His subject was human genetics, with special reference to deaf-mutism and other abnormalities.

In Switzerland the average number of deaf-mutes has been given as 24 per 10,000 population, as compared with only 8 per 10,000 in Europe as a whole. Prof. Hanhart said that Switzerland was an excellent theatre for genetic study because of the many villages which had been virtually isolated for centuries. He had a number of family histories going back to 1600, and the standard of observation by general practitioners and hospitals was so high that few important cases of variation were missed. Even now, in a time of change, very few movements of population disturbed these quiet valleys, and complete family pedigrees could be collected without much difficulty. In almost every region of Switzerland records of family histories were available, and fortunately there was very little venereal disease to complicate the picture. The frequency of pathological mutations was relatively high among these inbred communities, where the marriage of cousins and incestuous unions were not infrequent. At the same time there were inbred communities which showed almost no pathological mutations.

Prof. Hanhart's lecture was illustrated by some elaborate diagrams showing pedigrees in which cases of deaf-mutism and of diabetes mellitus occurred sporadically. His investigations had extended over twenty-five years, and he had endeavoured to consider not one character or condition alone but all the accompanying constitutional features. In one village with 2,400 inhabitants near the eastern end of the Lake of Geneva there were 49 deaf-mutes. Deaf-mutism might appear in an ancestor and not be repeated for two successive generations, then reappearing. In one instance a man in this region married a woman

from another region, so that no question of consanguinity arose, but the woman had two deaf-mute sisters, and the children of this marriage, nine in number, included three deaf-mutes. A man not a deaf-mute, but with deaf-mutism in his ancestry, married twice and by each marriage had deaf-mute children. Another example of these strange and wayward manifestations was of twins, a deaf-mute boy and girl with normal hearing. The reputed father was a deaf-mute, but on further inquiry, including blood tests, it was eventually shown that the twins were born of an incestuous union between the mother and her own father.

Although it was to be expected that when two deaf-mutes married all their children would be deaf-mutes, this did not always occur. He had one case where the child of such a union, born a deaf-mute, was able later to hear and to speak. He declared himself strongly against the sterilization of deaf-mutes. Deaf-mutism was sometimes seen in association with cretinism, but cretinism was produced by other factors and had now largely disappeared from Switzerland as a result of the much better feeding of the people. He protested against the idea that deaf-mutism necessarily went with feeble-mindedness. The greater number of these deaf-mutes were intelligent and conscientious workers, not to be distinguished, except by their deaf-mutism, from the general group. Prof. Hanhart also showed the family histories of nearly one hundred cases of diabetes mellitus. A number of families, he said, carried two mutations—deaf-mutism and some derangement of metabolism.

NEW CONTINENTAL HOSPITALS

A delegation from Charing Cross Hospital was sent recently by King Edward's Hospital Fund for London to study methods of hospital design and planning in Europe. It consisted of three members of the medical staff (Mr. Norman Lake, Dr. H. W. Vines, and Dr. Doyne Bell) and one experienced hospital lay administrator (Sir John Stewart-Wallace). Five hospitals were visited, namely, the Bürgerspital at Basle, completed in 1945, which was the subject of an illustrated article in this *Journal* (Oct. 5, 1946, p. 500), where it was described as a landmark in municipal hospital building; the Polyclinic at Zurich, also completed in 1945, together with the special hospital for children in the same city; the Beaujon Hospital at Clichy, Paris, completed in 1935, and the new Southern Hospital at Stockholm, completed in 1944. All these hospitals are owned and controlled by the city, or in Switzerland by the canton, not by the State.

In a long report to the committee of the Fund the delegates begin by pointing out that hitherto the planning of a hospital has been left largely to the architect, but, inasmuch as the hospital is an apparatus to be worked by doctors for the benefit of patients, both doctors and patients ought to be invited to share in the planning from its earliest stages. One of the striking features which impressed them on their tour was the extent to which on the Continent the experimental approach towards reconcilement of conflicting claims and the maintenance of a balance between various interests has replaced tradition in the solution of problems of hospital organization. For example, at Stockholm even the walls have been shifted to try out various patterns of floor spacing, and at Zurich a hut was attached to the old hospital building with all the services laid on, and here patients were admitted over a period of two or three years. The advantages and shortcomings of the different arrangements were discussed at periodical meetings of the planning committee, and the final decisions were made accordingly.

Variations in Planning

The Beaujon Hospital, Paris, is a vertical building of fourteen floors—an exaggerated reaction from the pavilion type. Unfortunately, although the hospital is built vertically, the departments are planned laterally in the attempt to make each floor an independent unit. The new Polyclinic at Zurich is part of an extensive rebuilding plan of the Zurich Hospital Centre, and is partly under the control of the cantonal health department as a public hospital and partly under the education department as a university school. The new hospital at Basle contains some 700 beds for general surgery and medicine, with an isolation block for infectious diseases and tuberculosis. The Stockholm hospital is a massive building with the flat, unrelieved surfaces which are a characteristic of Swedish domestic architecture. When completed it will take 1,200 patients.

The form of these large hospitals seems to be fairly standardized on the principle of two separate blocks, one for in-patient and the other for out-patient services, the two being connected by transverse corridors. The central administration rooms are sited in the main hospital building, not in a separate block. In all except the Paris hospital there are private beds for the use of honorary members of the staff. At Basle there are 39 private beds of the first class for which patients pay full private fees, and 70 of the second class for which reduced fees are paid. At Stockholm there are 93 private beds, an average of five or six for each department head. The methods of internal administration differ. At Basle there is a hospital committee of management appointed jointly by the canton and the town and containing two medical members, with an advisory committee consisting of the heads of the departments. There is a lay director at Zurich and a medical superintendent at Stockholm; at Paris the visitors failed to discover whether the head of the hospital was medical or lay.

All the hospitals are planned on the basis of the clinic as a unit, with a professor or someone of similar standing at its head. The position carries with it at most of the hospitals the right to practise privately. In Sweden and Switzerland the heads of departments are provided with good suites of rooms, including rooms for consultation and examination. At Basle they are paid about £45 a month for their hospital work, and also receive private fees and a capitation fee of about 6s. an hour for each student. Swiss professors have a number of official assistants who, at Basle, are paid about £600 a year, and below them are house officers whose salary is £420. At Paris there is a special building of flats for married medical and technical staff; the building is said to house 40 families. Shortage of nurses and domestic staff seems to exist everywhere.

European Hospitals and Medical Teaching

None of the hospitals mentioned is a full teaching school in the British sense; students attend only for clinical instruction. In Paris the unqualified students seem to be used freely in positions of some responsibility. A department may be staffed by the senior chief of the service, with, under him, a house officer who is often not fully qualified, and with four student externs. If the students wish to do so they can become externs after one year's clinical training, and remain as such for four years. Then they can become interns for four years more. In Sweden the medical course extends for eight years—three years' pre-medical and pre-clinical and five years' clinical work.

The report contains a vast amount of useful detail on such matters as ambulance unloading arrangements, night services, mobile bed equipment, nursing organization, preparation and service of meals, and siting of kitchens. The two-bed room is met with fairly frequently—an arrangement which was not popular at the new Queen Elizabeth Hospital, Birmingham. The delegates suggest that a 25-bed unit might be most profitably arranged by having two rooms each of eight beds, one room of four beds, and five single rooms. At Stockholm two units, each of 16 beds, are looked after by one assistant doctor. Three of these double units, with a few private beds, make a medical clinic, and four a surgical clinic. In the operating units nothing outstandingly new was found. In all cases the unit was planned about a central corridor with the anaesthetic room on the opposite side. At Stockholm there are 28 theatres.

The delegates crystallize their impressions in some forty conclusions. We quote a few:

Beauty in every aspect of hospital life is of first importance, not only in the external aspect of the buildings and in their harmony with their surroundings, but in the size, proportions, light, and decoration of the interior. There should be a high measure of flexibility in all arrangements for the nursing and other staff. There should be opportunity to live in or out for trained nurses. The most suitable unit of beds forming a ward under the charge of a single sister seems to be 24 or 25. Within the unit the largest bedroom should contain not more than eight and not fewer than six beds.

It is probably desirable that the out-patient department should be physically separate from the in-patient block. The maternity department, as regards both in-patients and out-patients, should also be physically separated from the departments dealing with general

sickness. The comfort of the out-patients should be carefully studied by the provision of chairs and tables instead of benches in waiting-halls, and reasonable provision of canteen facilities at certain points. Air-conditioning is essential for operating theatres and *x*-ray rooms, but not necessarily for the general hospital. The installation of pneumatic transmission should be carefully considered as a means of saving manpower.

It is to be hoped that the report will be studied by those responsible for hospital administration and planning in Britain, where it may well affect future policy.

Preparations and Appliances

CONTROL OF HOT-AIR STERILIZATION OF SYRINGES

Drs. J. COLQUHOUN and ARTHUR JORDAN, of the Royal Sheffield Infirmary and Hospital, write : We have been developing the use of all-glass syringes sterilized by exposure to a temperature of 160° C. for one hour. Experience showed the need for a check on both time and temperature, since apparatus was not entirely satisfactory and personnel were largely unskilled. We were familiar with the use of control tubes which changed colour when autoclaving was adequate, and we approached the makers for something similar, to change colour at a temperature of 160° C. after one hour. They were able to produce such a tube, and in use it has proved satisfactory. The control tube is placed in the barrel of a syringe enclosed in a glass tube as are the other syringes ; thus penetration of the heat to the inside of the items to be sterilized is verified.

These tubes led us to detect that the temperature on different shelves of a hot-air oven could differ : with a thermometer we found differences of up to 15° C. In the light of this finding we feel that sterilization for one hour in a hot-air oven with a single thermometer which reads 160° C. or more the whole time is not necessarily adequate sterilization, and more control is needed.

The control tubes are made by Messrs. A. Browne and Co., Chancery Street, Leicester.

Reports of Societies

THE RENAL CIRCULATION

A meeting of the Section of Experimental Medicine of the Royal Society of Medicine was held on Oct. 21 for a discussion on the renal circulation.

Radiographic Interpretations

Dr. A. E. BARCLAY introduced the subject by describing investigations which had been undertaken at the Nuffield Institute for Medical Research, Oxford. The growth of the clinical use of radiology, he said, had been phenomenal, not only in volume but in value, yet radiology had been frequently ignored as a means of approach to experimental studies. One of the great virtues of radiology was the opportunity which it offered of studying function without operative interference. It was necessary only to mention in this connexion the gastro-intestinal tract, the gall-bladder, and the kidney. Again, in studying dust excretion from the lung it was possible by using radio-opaque dusts to see the distribution in the lung field of the living animal. The study of renal circulation had also benefited greatly from radiological investigation.

In the work on the renal circulation Dr. Trueta and Dr. Barnes, who came to the Nuffield Institute in 1941, had made a special study of renal ischaemia and the crush syndrome. A simple technique was developed by which, with the assistance of a radio-opaque substance, radiographs were taken at stated intervals of the lower abdominal aorta. In September, 1945, a team was formed to investigate the changes which occurred in the kidney in the crush syndrome—a study which was accelerated when presently adequate supplies of thorotrast became available. This substance proved satisfactory and had no effect on the blood pressure. The method of cine-radiography was at first employed, but this was expensive, and the actual picture was too limited in size to be very useful. Cine-radiography had now been superseded by large still films (38×15 cm.) which included the whole abdomen. Rabbits were used in the experiments. As soon as the animal was anaesthetized a series of films was taken at intervals of 3 or 6 seconds, so as to get the control picture, and then a tourniquet was applied or other procedure adopted and a further series of films was taken at the same intervals. Comparison of the two series showed that the procedure caused large changes in many of the vessels, including the renal artery and renal vein.

The most constant observation was that with the tourniquet the renal artery was diminished in diameter and the renal vein greatly increased. The tourniquet technique was tedious, and experiments were made to find out whether electrical stimulation to the proximal end of the cut nerve could be used instead, and this was found to be effective. Prolonged anaesthesia by itself did not appreciably affect the measurements of the vessels. Various drugs were also tried without any significant effect. Severe haemorrhage reduced the size of both the renal artery and vein. It was suspected that the changes found in the tourniquet experiment were due to a nervous action, and this was confirmed by further investigation. The blood was shown not to be taking its normal course but to be short-circuited in some way.

Characteristics of Blood Flow

Dr. J. TRUETA followed with a pictorial description, accompanied by many lantern slides, of the renal circulation. He said that this work had occupied a little more than three years. To begin with, it was suspected that the effect produced on the renal vessels by a tourniquet could be reproduced by electrical stimulation of the splanchnic nerve. Experiments were carried out on rabbits in which the nerve was sectioned and stimulation was applied by means of faradic current. Methylene blue was then injected into the renal artery and was shown to distribute itself in a strange pattern which had not been observed before. They had had a suspicion of some anastomosis or short-circuiting occurring in the kidney, but they had not known which were the vessels concerned or their calibre or arrangement. Dr. Trueta drew attention to the arrangement and structure of the glomerular vessels as shown by means of thorotrast and other opaque media. The filling of the vasa recta in the rabbit was also shown. Another example was the cortical ischaemia produced by injection of staphylococcus toxin. The short-circuiting mechanism had been repeated in the cat and other animals. He mentioned that more than 700 radiographs had been studied in the course of this work and the movements observed had been analysed. In one example a tourniquet was placed around the thigh of the animal and an injection given, with the result that there was a great concentration of the contrast medium in the cortex, with complete emptiness of the medulla ; but it had been shown to be possible to prevent the action of the tourniquet by splanchnic section, and after an interval the cortical circulation was seen to be closing and the medullary circulation opening.

This work was still being pursued, and a new *x*-ray procedure was being employed with a special technique as a result of which the glomeruli could be seen in great detail. He showed a remarkable series of *x*-ray pictures illustrating the stages and vagaries of renal circulation, the cortical ischaemia following the application of the tourniquet, and the different result when the tourniquet was applied after splanchnic section. He also showed " neoprene " casts illustrating true juxta-medullary arterial degeneration, and radiomicrographs of the cortex and capillaries.

Dr. J. F. HEGGIE showed some illustrations complementary to those already shown by Dr. Barclay and Dr. Trueta concerned with the experimental production of cortical necrosis in the rabbit, with special reference to glomerular circulation. He said that when the right renal blood flow was measured directly in the normal anaesthetized animal by the method of Dunn, Kay, and Sheehan the rate was found to lie between 2 and 4 ml. per gramme of kidney substance per minute, usually

between 2.5 and 3 ml. When finely particulate carbon suspended in serum was injected into the renal artery in the normal anaesthetized animal at the same rate as the blood flow therein for 3 seconds and the pedicle immediately clipped, the renal vascular architecture was clearly demonstrated, and the pigment was found in the intra-interlobular arteries and afferent glomerular arterioles and glomeruli, and the essentially glomerular character of the circulation was confirmed. The efferent vessels of the glomeruli situated near the medulla, to which in 1941 the speaker gave the name juxta-medullary glomeruli, provided the supply to the medulla, and this, he suggested to Drs. Barclay and Trueta, was the explanation of the short-circuit which they described in their preliminary report. These vessels were wide and ran a fair length before they broke up to form the very rich capillary network around the tubules of the medulla, the ellipse of Henle, and the collecting tubules.

It was found that the glomerular volume in the normal rabbit changed five times each second. These velocities were not altogether unexpected having regard to the fact that the glomerular capillaries were interposed between two arterioles in which the pressure was high. In less "acute" experiments, if the total renal minute volume remained the same and if the medullary pathway alone was operating, then the glomerular volume was changed 30 times each second and the velocity proportionately increased; but if the juxta-medullary glomerular capillaries were dilated (and they could accommodate the normal glomerular capillary volume) the rate of change was five times per second and the velocity in the dilated capillaries was still normally 1.25 mm. per second.

Dr. E. M. DARMADY said that cortical necrosis following severe accident was not a very common finding. There were certain features found histologically in such cases which did not fit in very well with the findings shown that evening. The bloodless glomeruli, the puncture of the vein at the glomerular area, and the congestion of the parts in the medullary zone were among these. He felt that it was not quite fair to compare the findings in the rabbit with the human at this stage, because one knew that experimentally it was very easy to induce an ischaemia by traction on the kidney. They should be guarded before arguing from the rabbit to man.

Dr. R. H. PARAMORE said that he had made attempts to explain the lesion in the cortex in eclampsia and in certain cases of pregnancy after, for example, accidental haemorrhage (though only in concealed accidental haemorrhage, not when blood escaped), and in such cases it seemed to him that the kidney was compressed and that the urine secreted could not get out. There was blood stoppage through a part of the kidney and the pressure of the kidney was increased. It seemed to him that mechanical factors were extremely important.

The President of the Section said that he had been studying the circulation in the liver by means of the injection technique, and he had seen some phenomena which were very similar to those described in the case of the kidney. The thing which impressed him also was the mechanical factor, the swelling of the liver parenchyma, which dammed the blood back into the portal circulation.

The 291st annual Harveian Oration was delivered on St. Luke's Day, Oct. 18, at the Royal College of Physicians, by Dr. C. E. Lakin, Consulting Physician to the Middlesex Hospital, who chose as his subject "Our Founders and Benefactors." He said that the College was a Royal Foundation, having been founded in 1518 by Henry VIII at the instigation of one of his physicians, Thomas Linacre. Linacre was one of a group of men, including Grocyn, Dean Colet, Sir Thomas More, and Erasmus, who were profoundly influenced by the Revival of Learning and who took an active part in it. The foundation of the College and the revived interest in medicine were the direct result of that remarkable mental awakening. Among the benefactors mentioned were John Caius and Dr. William Gilbert. He pointed out the three stages in the evolution of knowledge as exemplified by these investigators. Linacre looked to the past and recaptured the knowledge of Aristotle and the old philosophers; Caius was deeply steeped in the same learning but turned to the practical investigation of nature; while William Gilbert steadfastly looked forward, and by introducing the experimental method into research may be said to be the first English modern scientist.

Correspondence

Soviet Science

SIR,—Your leading article on "Genetics and Science in the U.S.S.R." (Oct. 18, p. 616) will not fail to stir the emotions of its readers; it also stirs reflection. What is happening in the Soviet Union is no haphazard attempt at security but a deliberate policy based upon a historical theory, a theory concerning the evolution, advance, and prosperity of a nation or of any group of any "beings." The theory may be shortly stated as one which ascribes all these possibilities to war between opposites. War within, war without, are the productive habits, productive in a nation of these events.

This theory is in flat contradiction to the facts that are in the files of that study of relations which we call science, and most clearly in the part of this study which gives a historical account of the relations within and without living organisms. The relations to which biological science ascribes what equilibrium and evolution have been exemplified by organisms (and a nation is an organism in potential equilibrium) may be generally stated as the union or mutual balancing of complementaries. There is pressing need to-day not for a new philosophy but for a plain declaration by science of this general induction from its studies, and an exposure of the falsehood and fallacy from which the policy described in your article is derived.—I am, etc.,

Wantage. K. W. MONSARRAT.

Education for General Practice

SIR,—At the beginning of the article by Dr. John Rickman on "Psychology in Medical Education" (Sept. 6, p. 363) tribute is paid to the teaching which many young doctors get from their principals in private practice; but the writer does *not* go on to include the general practitioner in his scheme of teaching for the student. It would be so easy to arrange—a panel of teacher-practitioners chosen by their fellows, and students giving two nights a week in their final year to sitting in at a surgery, helping with medicines, and going out to late calls with the doctor. Most students would think it fun and be grateful for it and learn a great deal, and the older men would at long last get some recognition from their own profession of the good work they do.

The general practitioner is a lonely man. He is too busy to meet his fellows, and in a poor district of London, say, perhaps the only chance of understanding from his fellows and chance to talk about his cases is with the medical officers of the local L.C.C. hospital. They probably never meet, but they do talk on the telephone. The average H.S. or H.P. of a teaching hospital is so afraid of being "snagged" and is therefore so cocky, and in any case changes so often, that the general practitioner gives up quickly all hope of any fruitful medical contacts with even his own hospital.

As this letter shows, I seem more interested in the general practitioner than in the student, but they cannot be separated. The student can teach the doctor the latest in medicine. At present he has to rely on the drug-house man (who often does this very well). I have the liveliest memories of pleasure in being taught by my principals and teaching them too, and later on when I had an assistant myself. I would hold that the house job and the assistantship in general practice are equally necessary and honourable for anyone starting a medical career. This, I feel, should be *officially* recognized with honours of some kind for the teacher-practitioner (honorarium or title).

So much has been taken away from the general practitioner (and the patient)—the satisfaction of fee-giving and taking (still recognized by the patient, who feels that the private doctor's medicine must be better than the panel-doctor's), the pride in the practice which he inherited from a good man and which he could only dispose of to a successor tried and approved of by him and his patients, the teaching he used to do, the sense of undivided allegiance to his patients, the loss of dignity associated with form-filling, with tuberculosis officers who treat your patients without by-your-leave, Ministry of Health doctors who examine your panel records (I know of no panel doctor who does not stay out all day the Ministry doctor comes and does not grind his teeth with rage for days after), the Ministry referees who discount your certificates and continually remind you that you serve two masters.

I am not a die-hard, but I am sure that the satisfactions in a general practitioner's life are now very much less than they used to be and the dissatisfactions more. After all, what is the use of educating people to be doctors if being a doctor is no fun? If teaching could be brought back to general practice it would be more fun.

Dr. Rickman suggests that anatomy should go on side by side with work in casualty. I entirely disagree with this. A student doing his anatomy and physiology has quite enough to deal with emotionally. It is his "latency period," as it were, as a student. Let him learn to deal with the body, dead, get to know it and be unafraid of it, and enjoy the nice machines of physiology *first*. The denying of affect common to the life of the dissecting-room (if the proposal were followed) might lead to a greater carrying over of this mental attitude into relations with patients; or alternatively some of the students would never learn their anatomy.

The student nursing orderly is a first-rate idea. This, I think, would go well with the anatomy-room time or even earlier if the student is doing his First M.B. at hospital. (Why should he not earn his keep part of the time in this way?) It would be a more limited responsibility and give chances for the expression and learning of gentleness (the student when he is in casualty is already a doctor, diagnosing and prescribing treatment). In the wards he would help to lift the heavy patients or make beds or learn to fix pillows (in general practice this was the most valuable single bit of knowledge that I had). I truly believe he would be willing to sweep floors and empty pans! I wish it could come true. Lastly, that footnote on the quack is a masterpiece. But should it not be admitted that the quack may be sometimes more imaginative than his contemporaries?—I am, etc.,

London, N.W.1. JAMES M. TAYLOR.

Penicillin for Infected Hands

SIR,—Frank D'Abreu *et al.* in their article on penicillin and the treatment of infected hands (Oct. 18, p. 603) proved one general rule—that if patients with septic hands are given penicillin in twice-daily doses of 300,000 units, in addition to other methods, then the loss of duty would be shorter than if penicillin had not been given; but one is not justified in giving all cases of sepsis of the hand routine systemic penicillin. Even in these days of adequate supply one still ought to economize in its use; therefore one has to ascertain in which cases penicillin will have most value.

Before deciding on any treatment the following factors should be ascertained: (i) Degree of pain (number of nights patient has been kept awake); (ii) degree of tenderness; (iii) temperature; (iv) presence of lymphangitis or adenitis.

During the first six months of this year I was in charge of a busy casualty department and had occasion to treat some 200 septic fingers. During this time I tried, with varying degrees of success, all the recognized methods of treatment with a view to assessing their value. I came to the following conclusions: (*a*) In very early cases, if the patient has pain not sufficient to keep him awake at night, prophylactic penicillin would be sufficient alone in some cases and incision avoided. This was shown, for instance, in the nurse (Case 8 in the article) who received by mistake some 500,000 units. (*b*) Once, however, a patient has lost a night's sleep due to pain, or there is no alleviation of the pain despite 24 hours' penicillin therapy, immediate incision is always indicated. (*c*) The presence of pyrexia above 99.4° F. (37.4° C.), with or without lymphangitis and adenitis, calls for penicillin.

I also tried the effects of penicillin in those rare cases of bone necrosis. These are the cases that, despite the above measures, do not respond. They are: (i) The neglected cases which come up for treatment only after almost all the pulp space has been destroyed; (ii) the rare case which, despite incision and penicillin therapy, fails to resolve. I have, during the six months under review, seen thirteen such cases. One begins to suspect that progress is not being made when, despite lack of pain and other symptoms, the finger begins to discharge pus profusely day after day. Radiological examination at this stage invariably shows some degree of bone rarefaction. Systemic penicillin alone to these cases does not seem to alter to any extent the amount of discharge once the bone is involved. This is due to the following reasons: (i) Bone necrosis is due to tension in the pulp space occluding the nutrient artery; the blood supply to the bone is diminished, and the infection early takes a hold and the penicillin, therefore, given systemically cannot reach the area; (ii) the probable walling off of the necrosed area. Systemic penicillin was actually tried in the first three cases and had to be discontinued and local penicillin therapy instituted.

Of these thirteen cases all but two responded well to local penicillin infiltrated down the sinus and around the necrosed area. The two that did not respond to treatment showed, on radiological examination, that some two-thirds of the terminal phalanx had been destroyed. Both these cases, however, continued to discharge pus after the usual operative interference, but after local penicillin had been infiltrated the wounds healed rapidly.

The method I used was as follows. The discharging sinus was cleaned out and dried as much as possible. About 0.25 ml. containing about 50,000 units of penicillin was injected through a wide-bore needle which passed through the sinus into the necrosed area of bone. A dry dressing was placed over the affected area. The dressing was undisturbed for two days. After removing the dressings, in many cases they were found to be clean and uncontaminated by pus. From then onwards the sinus seemed to heal very slowly but without further discharge. In the minority of cases after two days there was still a discharge, but not very profuse, and the infiltration was repeated. In two cases three attempts were made before the discharge finally ceased permanently.—I am, etc.,

Manchester. E. JAFFE.

SIR,—The excellent article on systemic penicillin in septic hands (Oct. 18, p. 603) brings me to mention a new method of local application. It is effective and economical. Penicillin powder or solution when applied to an incision in a septic hand is rapidly washed away by outflowing blood and pus, but a small tablet can be placed in the small abscess cavity of, for example, a pulp infection and will remain there long enough for blood to clot around it. One firm makes up these tablets, 10,000 units to a tablet, actually for solution.

The advantages of effective local application of penicillin over systemic are obvious. 10,000 units inside an abscess cavity wall must be worth 100,000 units outside in the blood stream. The incision and abscess heal so rapidly that smaller incisions can be made and drains dispensed with in many cases. Of course the method can only be used after surgical intervention has occurred, which ideally should be unnecessary but in practice is necessary in the majority of infected hands.

I thoroughly agree with leaving the initial dressing for three days, although the patient should attend during this time for temperature recording, etc.—I am, etc.,

London, W.13. JOHN P. RAW.

The Harveian Orations

SIR,—In an interesting article on the Harveian Orations (Oct. 18, p. 622) by Messrs. W. J. Bishop and F. N. L. Poynter, the following passage occurs: "The oration has been delivered by some 'so obscure as to make their appointment to that post their only claim to fame, and by men of such reputation as to make it their smallest title to distinction.'" The quotation given between inverted commas is theirs, but they do not state whence it comes. The authors go on to say: "The names of Akenside, Arbuthnot, Garth, Mead, Heberden, and Baillie are known to all; but who has heard of John Hawys, Charles Bale, Robert Hopwood, and Charles Feake?"

I wonder whether this is fair criticism. To take the first mentioned, John Hawys (or Hawes), born *circa* 1660, he matriculated 1676; Corpus Christi, Cambridge; took his B.A. in 1677, M.A. in 1681, M.D. in 1688, and was admitted a Fellow of the Royal College of Physicians on Dec. 22, 1692. He was Censor in 1704, 1725, 1728, and 1732; he gave the Harveian Oration in 1721, and was Councillor 1732–3–4. This is surely not an undistinguished career? John Hawys was the son of John Hawys (and Maud Gleame), of Wymondham, Norfolk, a physician and theologian who took his M.D. from Corpus Christi in 1660 and died on Aug. 19, 1683. His grandfather, also John, after taking his M.D. from the same college in 1629 practised and died at Wymondham on Dec. 15, 1679. His great-grandfather, again John, was born at Walsham in 1568,

matriculated 1585, was admitted to Caius College, and died in 1663. Dr. John Hawes, F.R.C.P., came to London; he married in 1692 Margaret, the daughter of Dr. William Smith, of Chiswick, and the baptisms of his children are entered in the parish register of St. Helens, Bishopsgate, where he was churchwarden in 1701.

Among his children were William, born Aug. 30, 1704, ordained (Lincoln) 1728; and John, baptized March 12, 1706. Dr. John Hawes was buried May 24, 1736, "at the lower end of the church," his wife Dec. 11, 1741. At some time he may have lived in the parish of St. Albans, Wood Street, and later in St. Bartholomew's Close. John Hawys may be but an obscure name to writers of to-day, but these few notes suggest, I think, that he may have been a worthy and honourable physician.—I am, etc.,

London, W.1. HUGH S. STANNUS.

Miliary Appearances in the Lungs in Mitral Stenosis

SIR,—I was glad to see that my article on "Miliary Appearances in the Lungs in Mitral Stenosis" (Sept. 27, p. 488) had evoked some comment, and am particularly interested to learn that Dr. Haldane G. Nelson has seen three such cases within the last twelve months or so. Two of his cases were seen shortly before death from congestive heart failure and might well have shown radiological signs representing a combination of miliary stippling and congestive shadowing. I would be most interested to see the films. The third case he describes is even more interesting, though in a clearly different category, as it was associated with a pyrexia which responded to salicylate therapy. This must almost certainly have been a case of rheumatic lung (rheumatic pneumonitis), first described, I believe, by A. E. Naish. I have seen a peculiar coarse lung mottling in this condition, but a fine stippling of the miliary type has been described by Pendergrass and Leopold (*J. Amer. med. Ass.*, 1945, **127**, 701).

I do not agree with Dr. Muriel O'Doherty's views. She describes the pathogenesis of the miliary stippling we see in the finer pneumoconioses, such as the siderosis she quotes of the West Cumberland haematite workers. Haemosiderosis is an endogenous condition. My belief is that the haemosiderin-laden histiocytes are prevented from progressing along the lymph channels to the interlobular collections of lymphatic tissue, either by disturbed pressure relationships in the lymphatics due to chronic pulmonary venous congestion, or, as Prof. A. C. Lendrum suggests in a letter I have recently received from him, by the occurrence of fibrosis in the immediate neighbourhood of the choked-up alveoli. The rosette-like appearances of the individual nodules I described in the magnified photograph should, according to Dr. O'Doherty's theory, have a radio-opaque centre if these are due to hyaline degeneration in the centre of a fibrous nodule. Actually the reverse is the case, as the centre consists of a cross-section of a terminal respiratory bronchiolus, which is, of course, translucent. The finding of abundant haemosiderin-laden cells in the sputum also strongly supports the intra-acinar theory. Like Dr. O'Doherty, I would not expect an *x*-ray photograph taken to-day to be materially different from the one seen in 1946, but my reasons for doing so would be different from hers.—I am, etc.,

Sheffield. T. E. GUMPERT.

Treatment of Varicose Veins

SIR,—We surgeons rise like goldfish at feeding time to an article on varicose veins, but dislike clinics consisting mainly of them. I read with great interest the stimulating contribution of Prof. A. M. Boyd and Mr. D. J. Robertson (Sept. 20, p. 452). I think there are three ways of dealing with varicose veins. The first is that detailed in the above article by tying the "head springs" filling the superficial veins—i.e., the internal or external saphenous veins and their branches and prominent communicating veins. I find this gives good immediate results and the veins often spontaneously thrombose. In two years or so the veins reappear, especially in the leg, and later become troublesome. They have refilled from lesser communicating veins, for the varicose condition is a progressive one.

The second method is to tie the internal or external saphenous veins in one or more places and to inject a sclerosing fluid down them either with a hypodermic or a long needle. The results of this are also good, even though, as Boyd and Robertson show, some of the fluid goes into the deep veins; massive superficial thrombosis often follows. In my patients some varicosities reappeared in the leg two or four years later, but the trouble was never so acute; most patients were symptom-free.

The third attack is to tie the internal saphenous vein at the groin and ankle and to scarify its interior mechanically by a needle with a roughened head and thereby to make as certain as possible that the main stem of the internal saphenous is permanently destroyed by thrombosis and organization. In addition I slowly inject a moderate amount of sclerosing fluid to supplement this action and to permeate into the branches. This method has given the best effects in my hands. I am indebted to Mr. Riddoch, of Birmingham, for the physical abrasion of the interior of the vein.

Symptoms of Varicose Veins.—"Are varicose veins a disability?" In most cases, in my experience, emphatically yes. A few people do come because of vanity and fear of their parents' sufferings, but on the whole, since I have inquired before and after operation, I am surprised at the inconvenience, pain, itching, weight, tiredness, sleeplessness, incapacitation, and expense they cause, particularly when a recurring complication develops like phlebitis, eczema, ulceration, not to mention refusal of hard work and inferiority feelings.

The Incision.—I found the vertical one gave a poor aesthetic result and that the transverse one was inadequate sometimes. I therefore combined the two into a "hockey stick" incision beginning externally in the crease of the groin and curving downwards and inwards parallel to the scrotum or labia. Its centre is where a line starting at the pubic spine intersects the groin at right angles. The exposure is perfect and the scar inconspicuous; it is almost a "normal" incision.

Deep Thrombosis.—I was aware of the passage of some of the large doses of common salt into the deep veins from the fall in blood pressure which takes place sometimes immediately afterwards and also from the occasional transient haemoglobinuria that followed its use. I still believe that it is quickly diluted into ineffectiveness. I now use a smaller bulk solution called P3G (phenol 2%, glycerin 30%, glucose 30%, and gelatin ½%), 10 ml. each at the groin and ankle. A few swollen legs have occurred in my patients. They have been temporary and only cause discomfort for two to three weeks, and none have approximated to a white leg. The moment deep pain or swelling appears dicoumarol, 50 mg. t.d.s., is given and patients are kept about. The understandable impulse to lie up is restrained.

Communicating Veins.—I would thank Boyd and Robertson for their precise location by phlebograms of the large communicating veins above and below the knee. They occur often enough as primary sources to make precise diagnosis difficult unless their existence is known. It is on account of their variability in place, number, and size that I aim to permanently destroy the entire internal saphenous from the groin to the ankle. A large communicating vein does rarely require individual ligature. With my patients most have been at the lower third of the leg, just above the ulcer area. I believe the full clearance of the varicose veins of the leg is essential for the permanent relief of dermatitis, eczema, and ulcer. This is one reason for the ligature at the internal malleolus.

Follow-up.—Finally, for the perfect aesthetic result (and this is the aim in hospital and private), I find that these patients require inspection every three, four, five, or six months, for "tidying-up" injections, for three years.

Conclusion.—The personal suffering and impairment of national efficiency due to varicose veins and their complications are enormous and generally unrealized.—I am, etc.,

London, W.1. HAROLD DODD.

Road Accidents

SIR,—With reference to road accidents, and particularly as regards the driver's liability, neither in your leading article (Oct. 18, p. 618), nor in Dr. Soddy's paper (p. 623), nor, incidentally, in my own letter which you were good enough to publish (May 17, p. 696) is there any mention of the individual's ability to do more than one thing at a time, or, rather, to follow more than one train of thought simultaneously. Strictly speaking, perhaps this is impossible, but from a practical point of view this mental agility is displayed in very varying degrees. One person will apparently be able to listen to and remember two or more simultaneous conversations, or even play a tolerable

game of bridge while talking or thinking about something quite foreign to cards. The above ability or the lack of it has a great bearing on the making of a good or a bad driver.

Driving is so easy in a well-found car that it is no longer, in most circumstances, a whole-time job. One must perforce think of more than the driving, and it is here that the trouble arises. If one can only do one thing at a time, then when one's mind wanders, which it inevitably will sooner or later, then the driving suffers, and one becomes a potential danger. Many drivers will most of the time unconsciously react correctly to road stimuli, but this unconscious or subconscious reaction is not to be trusted, it is too vulnerable to variations of physical health, alcohol, and other factors.

When one considers such slogans as "Keep your eye on the ball" and "Don't speak to the man at the wheel," it may sound heretical to suggest that in order to be a tolerably safe driver it is necessary to keep only part of one's conscious mind on the business of driving, and to expect more from all drivers at all times is being unreasonable. But I myself would certainly feel safer being driven by a garrulous, agile-minded driver than by one who religiously kept his mind glued to the road, for in the latter case there would be the thought of what might happen when he became unstuck.

It would be both unpractical and undesirable to submit every applicant for a driving licence to a psychological examination; matters are quite complicated enough as it is; but this much could be done without any additional irritation. The car in which the victim is to have his test should be fitted with a wireless set, which the examiner should switch on when the test was under way. Then if subsequently there was any doubt in assessing the driver's capability—that is, if he were a borderline case—he should be asked what he had heard over the wireless while driving, and his ability to answer would sway the decision either for or against. A just-good-enough driver who answered that he was sure he hadn't a notion, he'd kept his mind on his driving, would fail, whereas a similar driver who could give some account of the programme would pass.—I am, etc.,

Thame, Oxon. E. GRANGER.

Heparin for Coronary Thrombosis

SIR,—Prof. Lambert Rogers in an article entitled "Advances in Surgery" (*Practitioner*, 1947, **159**, 247) cites a remarkable case of pulmonary thrombosis *in extremis* cured or relieved by an injection of 600 mg. of heparin. I suggest that here we have a drug that will prove of inestimable value for promptly treating cases of coronary thrombosis, and that it will save the life of many valuable patients, especially among doctors. It will prevent those most serious ravages to the heart muscle, and give time to treat the underlying arteriosclerosis with a suitable regimen and the use of iodides, etc., for many months. I suggest it should be given after the shock of the attack is treated with morphine, etc.—I am, etc.,

Glasgow. JOHN T. MACLACHLAN.

*** The use of dicoumarol in coronary thrombosis was discussed in an annotation on Oct. 25 (p. 662).—ED., *B.M.J.*

Treatment of Neurosyphilis

SIR,—I was surprised to find no mention of the well-known pentavalent arsenical called "stovarsol" in either of the two articles on the treatment of neurosyphilis in the *Journal* of Oct. 11. The drug is less toxic to the optic nerve than tryparsamide and has a spirochaeticidal action when given by mouth. On the other hand it may cause rashes and gastro-intestinal disturbances. The alimentary symptoms can be avoided by using bismuth–stovarsol ("bistovol"), which has an additional advantage because some of the bismuth is absorbed.

I have used bistovol by mouth in about 170 unselected cases of G.P.I. prior to malarial treatment and have observed clinical and serological improvement very similar to that noted in the same hospital with penicillin. Moreover, the recovery rate for this series of consecutive admissions was 26% compared with only 10% recovery rate for 200 consecutive admissions treated with tryparsamide and malaria. The details of these results have already been published in the *British Journal of Venereal Diseases*, 1945, **21**, 174.—I am, etc.,

Lancaster. R. PAKENHAM-WALSH.

Pulmonary Haemosiderosis in Mitral Stenosis

SIR,—Dr. Muriel O'Doherty's letter (Oct. 11, p. 587) flatly and frankly disagrees with the pathological interpretations given by Dr. T. E. Gumpert in his interesting article (Sept. 27, p. 488). The correlation of the skiagraphic picture with the morbid anatomy is, as we have already shown (Scott, L. D. W. Scott Park, S. D., and Lendrum, A. C., *Brit. J. Radiol.*, 1947, **20**, 100), a difficult enough matter, depending as it does on a correct reading of the morbid anatomy. The detailed histological study of our material (to be reported) does not support Dr. O'Doherty's view that the haemosiderin-laden phagocytes transfer the iron out of the alveoli and lead to hyalinized fibrous nodules in the intralobular stroma.

The striking fact about these cases is the persistence in the alveoli of the siderophores. In the immediately adjoining stromal tissues there is frequently seen iron incrustation of the elastica and the capillary walls, but no obvious haemosiderin, free or in cells, and it would appear as if a high local concentration of soluble iron must occur around the siderophore-filled alveoli. I presume that the fibrous change thereafter occurring in these parts comes to obstruct the lymphatic pathways and so actually prevents escape of the siderophores from the crammed alveoli.

The facts remain that a mitral stenotic showing the obvious skiagraphic picture of haemosiderosis may have an unchanged skiagraph over many months; that microscopically the fibrosis is seen only in the tissues immediately adjacent to the group of filled alveoli; and that despite the presence of many such groups of haemosiderin-containing alveoli there may be scarcely any recognizable iron in the lymphatics or lymph nodes.—I am, etc.,

Dundee. A. C. LENDRUM.

Retained Placenta

SIR,—It may interest Dr. Walter Calvert (Oct. 11, p. 589) to know that the method he calls "continuous light cord traction" was used by no less ancient a practitioner than the Father of Medicine himself. A description of the method is given in Smellie's *Midwifery*, the introduction to which, Dr. Smellie says, "contains a summary account of the practice of midwifery, both among the ancients and moderns . . . for the information of those who have not had time or opportunity to peruse the books from which it is collected. . . ." Of Hippocrates he says that he "no doubt availed himself of the observations of those who went before him in the exercise of the same profession." On page 13 of my own copy (edition unknown) comes the following paragraph:

> "In the book *de superfoetatione*, after having described the methods of delivering a dead child, he [Hippocrates] says, if the secundines come not away easily, the child must be left hanging to them, and the woman seated on an high stool, that the *foetus* by its weight may pull them along; and lest this should be too suddenly effected, the child may be laid on wool newly plucked, or on two bladders filled with water, and covered with wool, which being pricked, as the water evacuates, they will subside, and the child sinking gradually, will gently draw the secundines away: but should the navel-string happen to be broke, proper weights must be tied to it, in order to answer the same purpose; these being the easiest and least hurtful methods of extracting the *Placenta*."

What a wealth of ancient knowledge and eighteenth-century scholarship is revealed in the introduction to this delightful book!—I am, etc.,

Peaslake, Surrey. G. I. WATSON.

Bilateral Abdominal Testes with Teratomatous Change and Torsion

SIR,—I was interested to read the reports of Drs. A. H. Bennett and W. G. Shaw (Feb. 15, p. 256) and Dr. E. C. Chitty (March 15, p. 356), who respectively report cases of seminoma and sarcoma in intra-abdominal testes associated with torsion. It seems to me perhaps that it might be of interest to report a case of bilateral intra-abdominal testes with teratomatous change and torsion of the right testicle.

CASE REPORT

At 2 a.m. on Feb. 14, 1947, a Mohammedan missionary aged 34 was admitted to the West London Hospital with a diagnosis of renal colic. He was seen by the house-surgeon, who did not consider his condition warranted a second opinion. On the 15th his

renal tract was investigated as he gave a history of pain in the right loin radiating to the R.I.F. and groin, occasional pain in left loin, all of two days' duration. Investigations were all negative. He was seen by me at 6 p.m. on the 15th and physical examination revealed lower abdominal rigidity and tenderness, particularly in the R.I.F. P.R.: there was slight tenderness. These physical signs had apparently developed gradually during the course of the day. Temperature was 99° F. (37.2° C.) and pulse 100. Both testicles were absent from the scrotum. A diagnosis of appendicitis with spreading peritonitis was made and operation recommended.

A gridiron incision was made. On opening the peritoneum a little blood-stained fluid escaped; the appendix appeared normal, but a smooth tumour was felt rising out of the pelvis. The gridiron incision was closed and the abdomen opened by a right lower paramedian incision, and a smooth oval tumour, dark blue in colour, was seen attached to the right brim of the pelvis. The tumour was the size and shape of a coco-nut, with the epididymis tightly stretched over it, and could not be delivered into the wound until the pedicle had been untwisted. The pedicle was of interest: it was attached to the brim of the pelvis, and in its proximal free edge ran the blood vessels going to supply it; its central portion was avascular and formed by two layers of peritoneum; in its distal edge ran a leash of dilated veins, which on leaving the pedicle proceeded retroperitoneally as far as the internal inguinal ring, where they entered the canal. On the opposite side of the pelvis in a corresponding position lay the left testicle, which was atrophic, with the epididymis sitting like a cap over one pole. There was no leash of veins proceeding from it to the internal inguinal ring. The tumour was removed; no glands were found. On section, the tumour was found to be a teratoma. Post-operatively an Ascheim-Zondek test was carried out but proved to be negative.

—I am, etc.,

St. Albans, Herts. H. J. RICHARDS.

Midwives and Analgesia

SIR,—The repeated statement by the Minister of Health that analgesia should be provided for all women in childbirth has led the Central Midwives Board to encourage the instruction in "gas-and-air" analgesia of all practising midwives and pupil midwives. In the latter case the Board decided that after December, 1945, a pupil midwife shall not be admitted to the Roll of Midwives until she has passed a test of proficiency conducted by the specialist anaesthetist, the obstetrician, and the matron of an approved institution.

The Board has now decided to combine the test of proficiency with the Second Examination, and a pupil midwife will be *liable to be asked questions* on gas-and-air analgesia. It would seem that an anaesthetist will not be present for this purpose but that the obstetricians, in addition to examining each candidate in midwifery, will be expected occasionally to ask questions on analgesia. In the twenty minutes allotted to the examination it is unlikely that an examiner will regard analgesia as a means of testing the candidate's knowledge of midwifery, and it is unreasonable to expect that the whole of the second period of training should depend on the right answer to a question on analgesia. In these circumstances there is little doubt that the gas-and-air method will fall into disrepute, for no liability to be asked questions can replace the separate examination at which a high standard can be maintained.—I am, etc.,

Birmingham. B. L. S. MURTAGH.

Hearing Aids

SIR,—A proper device for increased hearing should give complete comfort without the wearer having to get used to undesirable sounds, though practice is needed to distinguish words where a microphone is employed. Most American machines have fragile attachments which render them expensive and useless unless one is in close touch with those who can readjust them or replace spare parts, like garage attendants can care for one's motor-car. A current demand for hearing-aids is resulting in far too many persons obtaining them without proper adjustment, often being influenced by a salesman who impresses them by an audiometer test, and more professional opinion should be sought before obtaining them.—I am, etc.,

Durban. F. G. CAWSTON.

Salaries of Specialists in N.H.S.

SIR,—Under the heading "Salaries of Specialists in N.H.S." Dr. Maurice L. Young (Oct. 11, p. 589) refers to a principle which deserves general rather than particular adherence—namely, that the possession of a specialist qualification should follow a higher degree in either medicine or surgery and that a practitioner should not be considered a specialist unless he has taken that higher degree. For example, a man or woman wishing to practise ophthalmology should be the possessor of a fellowship.

In my own specialty in Liverpool the principle was agreed to some years ago, not without some opposition, that the appointment to a hospital should be given only to those holding a higher qualification in either medicine or surgery as well as the D.A.; but there is another even more important instance—namely, orthopaedic surgery. Here it appears to me to be imperative that a would-be specialist should, before obtaining a diploma or mastership, have taken a fellowship of one of the Royal Colleges.

The question of gynaecology and obstetrics is perhaps more difficult, but having been the member of a gynaecological team in a teaching hospital for more than thirty years I am of the opinion that here too a fellowship is most important.—I am, etc.,

Little Gaddesden, Herts. G. F. RAWDON SMITH.

The Last Straw—Unholy Smokes!

SIR,—I have now to add a further reactionary notice to my overburdened surgery door: "No tobacco certificates signed here." We are requested to give our written consent to a process which physiology teaches to be wholly vicious. Let the bureaucrat's epitaph be: "He left no human activity untouched, and touched nothing that he did not confuse." Long may he smoke through the Great Hereafter.—I am, etc.,

London, S.W.12. T. STOKES.

Medical Photography in B.M.J.

SIR,—At the last committee meeting of the Medical Group of the Royal Photographic Society it was unanimously agreed that I, as Deputy Chairman of this Group, should write and congratulate you on the splendid reproduction of photographs published in your *Journal* of Sept. 27, illustrating various articles. My Committee feel, however, that the reproduced photographs would not have been possible without excellent originals, and that the photographers concerned should have been recognized and acknowledged by the authors. My Committee are sure that this would give great encouragement to all medical photographers.—I am, etc.,

London, S.W.7. H. MANDIWALL.

POINTS FROM LETTERS

Antihistamine Drug for Pruritus of Jaundice

Dr. D. C. WILSON (Inverness) writes: I can endorse the remarks of Dr. R. B. Hunter and Prof. D. M. Dunlop (Oct. 4, p. 547) on the action of antihistamine drugs in the relief of the pruritus of jaundice, having recently had to treat a case of subacute necrosis of the liver associated with intolerable pruritus of jaundice. "Benadryl" was used in a dosage of 50 mg. six-hourly with great relief to the patient, especially at night, sleep being obtained without the use of sedatives.

Foetal Cries

Dr. E. J. MOYNAHAN (London, S.E.1) writes: An early 18th century account of prenatal cries recorded in *Phil. Trans. roy. Soc.* (Abridged), 1731, **5**, 305, may be of interest following Dr. Curphey's recent report of a case (Sept. 27, p. 508). In this account a Mr. Derham describes how he visited a Hornchurch woman named Clark who had given birth a week before to a boy "that had cry'd in her womb, at times, for five weeks." He discusses in a subsequent communication the opinions of those who held that such a thing is absolutely impossible, but goes on to say that he had eliminated, in the case he reported, "Croaking of the Guts, or Womb, or the Effect of any Feminine Imagination." He states that the cries were heard by the father, mother, and many neighbours, who assured him that the sounds heard were "nothing like any Noise of Wind, or the Guts." He mentions Verzascha, of Basle, who had collected reports of many such cases, including one by a Dr. Needham, who told of the foetus of "an English Lady of Quality," which cried in her womb while she was at supper with her husband and her chaplain. Another instance was that of Christian II, King of Denmark, who was heard to cry before he was born. Derham thought these cases to be well attested, but admits that it is hard to account for the phenomenon. He was forced to the conclusion that the foetus may have an occasional respiration in the womb.

Obituary

GEORGE RIDDOCH, M.D., F.R.C.P.

Physician to the London Hospital

We announce with regret the death on Oct. 24, at the age of 58, of Dr. George Riddoch, physician to the London Hospital and director of the Department of Neurology and Psychiatry, and physician to the National Hospital for Paralysis and Epilepsy, Queen Square. George Riddoch was born in 1888. He was educated at Gordon's College, Aberdeen, and at Aberdeen University, where he qualified M.B., Ch.B. with first-class honours in 1913; he proceeded to the M.D. in 1917. In the war of 1914–18 he served as a temporary captain in the R.A.M.C. as medical officer in charge of the Empire Hospital for Injuries of the Nervous System. In the last war he was, with the rank of brigadier, consultant neurologist to the Army.

[*Elliott and Fry, Ltd.*

We are indebted to Dr. W. Russell Brain for the following appreciation: Dr. George Riddoch was born at Keith, in Banffshire. After a distinguished career as a student he qualified at Aberdeen University and came to London just before the 1914 war. He obtained his introduction to neurology as a resident at the West End Hospital for Nervous Diseases. During the 1914 war he served in the R.A.M.C. as medical officer in charge of the Empire Hospital for injuries of the nervous system, and this brought him into contact with Henry Head, who at once recognized his outstanding ability. Riddoch was already well trained in anatomy, having been demonstrator in the anatomy department at Aberdeen. His association with Head launched him into the main stream of the British tradition of neurology, springing from Ferrier and Hughlings Jackson with its dynamic approach to the subject and its intimate relationship with neurophysiology. During the years immediately before 1914, Head, with various collaborators, had been working on problems connected with sensation at all levels of the nervous system, and not many years previously Sherrington had published *The Integrative Action of the Nervous System*, which had so greatly illuminated the reflex functions of the spinal cord. The time was ripe, therefore, for the application of these new ideas to the interpretation of the rich clinical material provided by war injuries, particularly of the spinal cord. Encouraged by Head, Riddoch in 1917 published papers on visual perception after head injuries and on "The reflex functions of the completely divided spinal cord in man compared with those associated with less severe lesions," and in the same year, in collaboration with Head, he wrote on "The automatic bladder, excessive sweating, and some other reflex conditions in gross injuries of the spinal cord." Though opinions are still divided as to the nature of the "mass reflex" and the interpretation of some of the reflex phenomena Riddoch described, his work was a valuable contribution to the physiological interpretation of human nervous disorders, and this remained his approach in his later publications, of which the most notable were his Lumleian lectures to the Royal College of Physicians on "Pain of Central Origin" and his Presidential address to the Neurological Section of the Royal Society of Medicine on "Phantom Limbs and Body Shape."

The end of the war of 1914–18 saw him at the age of 30 with an established reputation as a neurologist. He recognized the need for enlarging his clinical experience, and through the Medical Research Council joined the staff of the newly founded medical unit at the London Hospital; shortly afterwards he became assistant physician to the Hospital for Epilepsy and Paralysis, Maida Vale. He now showed that he possessed the powers of logical analysis and lucid exposition of a first-rate teacher, even though at that time his native Doric was at first somewhat difficult for Southerners to understand. As a teacher he laid great stress upon thoroughness in history-taking and clinical examination, and maintained that there was no better subject than neurology for the teaching of clinical methods in general. His ability was so well recognized at the London Hospital that in 1924 he was elected a supernumerary assistant physician, there being at the time no vacancy on the staff.

He now decided to enter consulting practice, and few, if any, can have attained success in that difficult sphere in so short a time. He worked indefatigably. His precision of thought not only made him a good diagnostician, but enabled him to give clear-cut advice as to treatment, and his attention to detail prevented him from neglecting any measure that was for his patient's benefit. Moreover, he possessed a great charm of manner, a warmth of feeling for people, and an intuitive knowledge of their difficulties. His election to the staff of the National Hospital, Queen Square, added to his opportunities for teaching, and he welcomed the international contacts which it brought.

When the last war broke out Riddoch became head of the E.M.S. Neurological Unit at Chase Farm Hospital, to which the Neurological Department of the London Hospital was evacuated. He had already become civilian consultant in neurology to the Army, and in 1941 he accepted a commission and devoted himself to the organization of the Army medical neurological service. In this position he worked as unsparingly as ever to bring the knowledge he had acquired during the first world war to bear upon new experience gained in the second, and in this way he did much to help those treating peripheral nerve injuries and traumatic paraplegia. But he was a tired man when he took up this work, and before long his health began to break down. He would not give in, but struggled on courageously, though latterly he must often have been in constant pain, and he was doing his hospital work and seeing patients till the week before his death.

Riddoch's place in neurology is secure, even though the very plenitude of his gifts came to favour the doctor at the expense of the investigator. In committee he was liberal in his ideas and wise in his counsel. His friends will recall his gaiety and humour, his stories, many of them Aberdonian, which set the table in a roar and at which he laughed himself till he had to wipe his eyes, and in quieter moments his love of fishing and the Rothiemay countryside, of birds, books, and, above all, music. But he lived for his work, and died too young because he spent his life so generously. It is hard to believe that he has hurried away for the last time.

Sir Frederick Menzies writes: The sudden death of George Riddoch will have come as a great shock and a deep sense of grief to his many friends in the medical profession. To many of us it has been well known for some time past that he had gallantly and courageously carried on his work in hospitals and his large consultative practice despite the fact that he was almost constantly suffering from severe gastric trouble. Nevertheless, we all fervently hoped that when it was decided, only a few days ago, he should undergo a major operation he would soon make a satisfactory recovery to his former good health. Most unfortunately it was not to be, and all of us who knew him will mourn the loss of a very dear friend and colleague.

I have no doubt that appropriate tributes to his brilliant career as a physician and neurologist will be paid by those who are much better fitted than I, but I should like to be allowed as a personal friend of more than 30 years' standing to pay my humble and heartfelt tribute to one to whom I owe a deep debt of gratitude for many acts of skilful care and kindness to myself, my family, and many of our friends during long periods of illness and anxiety; and what is true of us is, I feel sure, true of many hundreds of others. All of us will desire to extend our profound sympathy to his widow and family.

Prof. Geoffrey Jefferson writes: By the death of Dr. George Riddoch one of the bright lights in British medicine has gone out. Undoubtedly the strain of his work for the Army, the E.M.S., and the M.R.C. in the national interest during the war helped to wear him out. His unusual gifts and his friendliness commended him to us all whatever branches of medicine we pursued. Others will tell of his arrival in London, of the zeal with which he undertook his tasks, and of the researches

that brought him to the forefront in international neurology. I want only to pay a last tribute to one with whom I was associated in several ways and for whom I came to have so much affection. George Riddoch fortunately retained his boyish enthusiasms, one of which was the unashamed delight that he had in the urbanity and broad outlook of the inhabitants of a great capital. It was traits like this that so endeared him to his friends, gave his personality a more complete significance than could be gathered from his sincere, indeed his passionate, devotion to his work. He should have died hereafter. Even so he leaves behind him a wealth of happy memories for those who knew him and contributions to knowledge that will long survive his day. He was an original thinker with the rare gift of pursuing a problem beyond its first and most easily reached objective.

A friend writes: British medicine has lost an outstanding neurologist. Riddoch was one of the many promising graduates who have left Aberdeen University and attained London distinction. During the first war his appointment to the Empire Hospital for Officers brought him into close touch with nervous disorders, and he became a trusted pupil of such senior neurologists as Farquhar Buzzard, Campbell Thomson, Purves Stewart, and Henry Head. Of the last-named he became protégé and favoured pupil; they collaborated in researches upon spinal lesions which are now classics. Head was instrumental in bringing Riddoch to the London Hospital, which he joined as assistant to the newly formed medical unit. When Head became incapacitated by Parkinsonism, Riddoch was acting as his medical counsellor and intimate friend. From the prosecution of original clinical studies he graduated to an increasing practice which steadily grew to considerable proportions. Leaving Maida Vale for Queen Square, he became famed as a brilliant and stimulating teacher with just that amount of dogmatism which endeared him to students. He was spared the handicap of a mordant wit, but instead was blessed with a rollicking sense of humour and of fun. His striking success as a consultant was due not so much to his considerable abilities as to his personality. He had that rare quality of warmth and kindliness, his reassuring smile and open-hearted manner going out to meet the unhappy or anxious sufferer. Riddoch was the most respected British neurologist in France. There he was an especial favourite, his mercurial charm making an appeal to Gallic sympathies, even though he was not a fluent linguist. To juniors visiting France he generously gave personal introductions which, like a golden key, opened all doors in Parisian academic circles. During the war years Riddoch drove himself unmercifully. Caught up as adviser to two Ministries, he instigated, and became chairman of, the Nerve Injuries Committee of the Medical Research Council. Later he was made consultant in neurology to the Army with the rank of brigadier. Despite frustration and disappointment he never ceased to strive for what he knew to be right. For some years his health had suffered gravely, but Riddoch's courage and sense of duty made him keep at his post, organizing the neurological service of the Army. When the war ended, his will power urged him on, visiting his hospitals, teaching, reassembling his disintegrated practice, and attending committees without relaxation or even adequate rest. It was all too obvious that his nerves were becoming strained as harp-strings, but he would not—could not—stop. By his colleagues "wee Georgie" will be sadly missed as a loyal, friendly, and very human personality.

LIEUT.-GENERAL SIR H. FAWCUS, K.C.B., C.M.G., D.S.O., M.B.

Lieut.-General Sir Harold Fawcus, Director-General of the Army Medical Services from 1929–34, and of the British Red Cross Society from 1934–8, died at Hillingdon on Oct. 24 at the age of 71.

Harold Ben Fawcus was born in South Charlton, Northumberland, and educated at Durham School and at the University of Durham. He played for the University at both cricket and football for five years, and he also played rugby for Durham County and Northumberland. He graduated M.B., B.S. in 1899, and soon afterwards began his Army career as an attached civil surgeon in the South African War. He was commissioned in 1900 and promoted captain in 1903. Two years later he took the Cambridge D.P.H., and at the examination for promotion to major in 1911 he obtained a special certificate in state medicine. This led to his appointment in 1912 as assistant professor of hygiene at the Royal Army Medical College, and in 1914 he became instructor at the School of Army Sanitation, Aldershot. He went to France in November, 1914, and from then onwards he devoted himself to medical administration.

He was with the Guards' Division as A.D.M.S. for most of the 1914–18 war, and he was mentioned in dispatches six times, and awarded the C.M.G. in 1915, the D.S.O. in 1917, and also the Croix de Guerre. After the war he was sent to India, but remained there for only a short time. Sir John Goodwin, when he took over the office of Director-General, offered Fawcus the post of A.D.G., and in this capacity he served Goodwin, Sir William Leishman, and Sir Matthew Fell until he himself became D.G., A.M.S., in 1929. The appointment had a four-year limit, but when Fawcus neared the end of his four years an extension was sanctioned because the Warren Fisher committee of inquiry into the medical organization of the Services was still at work. This committee was considering a scheme to revise the status of the college at Millbank and to increase the professional opportunities of R.A.M.C. officers. Sir Harold Fawcus had sponsored this scheme. His one year's extension was cut short, however, when Brigadier-General Hugh Bateman-Champain, Secretary-General of the British Red Cross Society, died. Sir Harold Fawcus succeeded him with the new designation Director-General. Many of the important reforms that he had suggested in 1932 had been brought into effect. The heads of the specialist branches had been concentrated at the Corps College at Millbank as advisers of the D.G., and this new arrangement was working well. His tenure of office with the B.R.C.S. lasted from February, 1934, until 1938, the year in which he became Colonel Commandant of the R.A.M.C.

His appointment as honorary physician to the King dated from 1923, and he was also a commissioner of the Royal Hospital, Chelsea. He was awarded the C.B. in 1928, and created K.C.B. in 1931.

EDWIN ALFRED STARLING, M.B., M.CH.

Dr. Edwin Alfred Starling died at Tunbridge Wells on Oct. 18 at the age of 90. Dr. Starling was born in North London in 1857, and at the age of 14 he became an articled pupil to a qualified surgeon-dentist. After four years' apprenticeship he entered Guy's Hospital in 1876. Dr. Starling won the Gurney-Hoare prize and the Beaney prize in pathology, and was later clinical assistant at the hospital. He qualified M.R.C.S., L.R.C.P. in 1881 and became obstetric resident and then house-physician at Guy's. After a short period as a ship surgeon, Starling acted as house-surgeon at Coventry Hospital in 1883, and while holding this post he took in 1884 the degrees of M.B., M.Ch. The following year he settled in general practice at Tunbridge Wells, where he formed a local branch of the Surgical Aid Society and, in company with two other Guy's men and a few others, started an eye and ear hospital as well as a natural history and philosophical society. He was on the staff of the eye and ear hospital as anaesthetist from its beginning and was later honorary physician until it was amalgamated with the present Kent and Sussex Hospital. He was then appointed to the combined staff as consulting physician and anaesthetist. Increasing arthritis and loss of sight steadily diminished the amount of work he was able to do, though he fought hard against both afflictions until in 1945 a fractured femur necessitated a long stay in bed. Starling was a member of, and had held office in, the Wesleyan Church and had been engaged in many of its activities. His wife pre-deceased him in 1944, after 58 years of married happiness. Their only son, Dr. E. C. W. Starling, is in practice at Tunbridge Wells.

Dr. Starling joined the British Medical Association immediately after qualification and soon interested himself in its work. In 1889 he was elected to the council of the old East Sussex District of the South-Eastern Branch, and in 1903, on the reorganization of the Association, became the first honorary secretary of the new Tunbridge Wells Division of the Branch, a post he held until 1910. In 1895 he was elected to the council of the old South-Eastern Branch and from 1909 to 1913 was honorary secretary of the Branch and its representative at the Annual Representative Meetings right up to 1928, when he resigned. He was chairman

of the Tunbridge Wells Division in 1910–11, and honorary secretary of the Kent Branch from 1913, the year of its formation, until 1927. From 1927 to 1929 he served on the Council of the Association, and was a member of the Private Practice Committee from 1927 to 1929, and the Medico-Political Committee in 1928–9. When the National Health Insurance Act of 1911 came in the South-Eastern Branch considered it wise to break up into three branches, one each for Kent, Sussex, and Surrey. Dr. Starling was largely responsible for this reorganization, and when it was completed he was presented with a massive silver rose-bowl. Before he retired from the Kent Branch secretaryship a cheque for 100 guineas and a study clock were given to him to mark the end of his fourteen years' service in that capacity.

Dr. Alfred Cox writes: These notes give a good idea of the man Starling was and as I well knew him: a hard worker in any sphere he entered, an enthusiastic B.M.A. man, and a man who was liked and respected by all who worked with him. He could be very persistent in pushing the claims of other people, but I never knew more modesty coupled with so much energy. At 90, when crippled and nearly blind, one must not be too sanguine about being remembered, but I am sure my old friend would be pleased to know that the *Journal* of the Association for which he did so much felt it a pious duty to remind his fellow members, and especially those in the south-east, that there has passed away one of the men who have done much to put the Association into the position it now holds as the indisputable representative of the medical profession in this country.

F. K. SMITH, M.B., CH.B.

Frederick Keiller Smith died suddenly at his home in Aberdeen on Oct. 4 at the age of 67. He received his early education at Robert Gordon's College and proceeded to Aberdeen University, where he graduated M.A. in 1899, and M.B., Ch.B. in 1903. He was house-physician to Prof. Findlay and house-surgeon to Sir John Marnoch, and for a few years he engaged in general practice. He then became assistant surgeon to Sir Henry Gray at Aberdeen Royal Infirmary. At the outbreak of war in 1914 he was R.M.O. to the 4th Battalion of the Gordon Highlanders and was later with the First Scottish General Hospital, with which he served during the remainder of the war, attaining the rank of major. In addition to his military duties, he assumed charge of Sir Henry Gray's ward at the Royal Infirmary while the latter was overseas. On the retirement of Mr. Scott Riddell from the staff in 1919, Mr. Smith was appointed full surgeon, and until he relinquished this charge at the end of 1945 he devoted himself unsparingly to the service of the institution. He was also for many years lecturer on clinical surgery at Aberdeen University. In the recent war he became surgical director of the E.M.S. in the North-Eastern region of Scotland. For many years he was medical assessor and referee in the sheriffdoms of Aberdeen, Kincardine, and Banff. A member of the British Medical Association for forty years, he held many offices, including those of honorary local secretary at the Aberdeen meeting in 1914, and vice-president of the Section of Surgery in 1939. He was a member of the Scottish Committee from 1919 to 1924, and of the Scottish Consultants and Specialists Group Committee from 1934 to 1946. Interested in many sports, he excelled at golf, and was captain of the Royal Aberdeen Golf Club in 1930. "F. K." will be sorely missed, not only for his qualities as a surgeon, not only for his fine judgment and wise counsel, but perhaps most of all for his friendliness and serene and tranquil spirit.—S. G. D.

Dr. TUDOR BENSON EVANS died on Sept. 22 at the age of 59. He was educated at Denbigh County School and Liverpool University, graduating in 1912. He was a house-surgeon, and later house-physician, at the Liverpool Royal Infirmary before taking up a resident appointment at the Denbighshire Infirmary. He was a ship surgeon in the *Lusitania* at one time, and he served with the rank of captain in the R.A.M.C. in the 1914–18 war. Subsequently he practised in Liverpool and in Holyhead, and finally at Prestatyn. He was chairman of the Flintshire Panel Committee, a vice-president of the British Legion, and president of the local Toc H and of the Welsh League of Youth.

Medical Notes in Parliament

Speaking in the debate on the Address, on Oct. 24, Mr. DALTON said there would be no delay in the operation of the National Insurance Act and the National Health Act. Both would come into operation next July. From another source it is learned that the Government proposes that in the Health Services a start shall be made only with urgent capital works.

The King's Speech with which the session was opened on Oct. 21 announced forthcoming legislation to abolish the Poor Law and provide a comprehensive system of assistance for all in need, and also to extend the scope of public care of children deprived of a normal home life.

Recruitment and Training of Nurses

Mr. MITCHISON asked on Oct. 23 whether Mr. Bevan could make a statement about the Report of the Working Party on the recruitment and training of nurses. This Report was summarized in our issue of Sept. 13 (p. 426) and was also the subject of a leading article (p. 422).

Mr. BEVAN replied that the views of the nursing and other organizations were being obtained. The Working Party's recommendations concerned long-term policy and could not be expected to produce an immediate increase in the supply of nurses. The Government trusted that hospital authorities would at once examine interim measures to reduce wastage and that they would make the maximum use of married and of part-time nurses, and would build up their domestic staffs to relieve nurses of domestic duties.

Medico-Legal

ANTI-VIVISECTION SOCIETIES AND INCOME TAX

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

The House of Lords decided recently that the National Anti-Vivisection Society is not a charity and is therefore liable to pay income tax. The Special Commissioners had allowed the Society's claim, unwillingly, feeling that they had to follow the 1895 case in which Mr. Justice Chitty had ruled that the Society was a charity on the ground that its intention was to benefit the community, and that the court should stand neutral on the question whether actual benefit to the community followed or not. The Commissioners appealed to the Court, and Mr. Justice Macnaghten found in their favour, the Court of Appeal confirming his decision by a majority. Some account of the judgment appeared in our issue for Jan. 12, 1946 (p. 72).

Their Lordships (Lord Porter dissenting) held[1] that the overriding test of whether the object of a society was charitable was whether it was in the public interest, and that this question was for the court to answer from the evidence before it, weighing the effect on the community against the purpose of the society as expressed in its stated objects. Having regard to the finding of the Commissioners that on balance the object of the Anti-Vivisection Society was detrimental to the public interest, they held that there could be no ground for saying that it was a charitable object.

Lord Porter in his dissenting judgment said that the object of the Society was the protection of animals from the sufferings believed to be involved in vivisection. That object was, in accordance with the decisions in the "animal cases," charitable. He could not accept the view that, when once an object had been held to be in the class of charities, it was then for the court to hear the evidence of both sides as to whether it was in fact beneficial. The object, in his opinion, did not cease to be charitable even if its success would be gravely injurious to the public benefit.

Correction.—Under the heading "Another Carbachol Accident" (Oct. 18, p. 636) we described the fourth fatal accident since the introduction of carbachol into this country in 1941. Our later comment on "moryl," which is a trade mark brand of carbachol, might have implied that this was the preparation used in the recent Stourbridge fatality. This was not the case.

[1] 1947 2 All E.R. 217.

No. 41

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	45	3	23	4	4	37	3	19	1	2
Deaths		—	—				—	—		
Diphtheria	201	18	60	11	5	269	21	88	36	15
Deaths	—	—	—	—	—	5	—	1	2	—
Dysentery	67	9	51	3	—	44	7	29	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	1	—	—	—	1	—	1	—	—
Deaths		—					—			
Erysipelas			43	10	3			43	8	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				80					58	
Deaths	70	4	15	8	5	44	2	8	17	1
Measles*	1,639	50	95	151	9	2,005	72	104	46	14
Deaths	—	—	1	—	—	1	1	—	1	—
Ophthalmia neonatorum	71	6	15	—	—	69	2	12	—	—
Deaths										
Paratyphoid fever	12	—	1(A)	—	—	6	—	1(B)	—	—
			4(B)							
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	403	19	3	1	2	351	31	1	3	1
Deaths (from influenza)†	13	3	2	1	—	9	3	1	—	—
Pneumonia, primary			164	15				143	21	
Deaths		23		6	3		23		7	7
Polio-encephalitis, acute	26	3				1	—			
Deaths		—					—			
Poliomyelitis, acute	338	31	76	6	10	22	3	1	6	1
Deaths		2					—			
Puerperal fever		—	8		—		1	15		1
Deaths										
Puerperal pyrexia‡	106	6	11	—	—	156	13	20	1	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,316	84	300	60	44	1,106	94	202	39	54
Deaths	—	—	—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	8	1	—	18	2	3	—	2	2	25
Deaths	2	—	—	—	—	1	1	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,043	73	40	28	2	1,362	108	136	36	15
Deaths	3	—	—	1	—	12	—	1	1	—
Deaths (0–1 year)	361	46	66	25	12	327	39	59	41	12
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,240	676	556	147	85	3,846	579	507	179	106
Annual death rate (per 1,000 persons living)			11·6	9·3				11·2	11·5	
Live births	9,031	1492	1096	430	276	9,532	1477	1160	414	269
Annual rate per 1,000 persons living			22·1	27·1				23·3	26·5	
Stillbirths	216	30	42			258	35	31		
Rate per 1,000 total births (including stillborn)			37					26		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Poliomyelitis

Notifications of poliomyelitis in England and Wales fell to 276 (338). This is a reduction of about 18% on the figures for the previous week. The decline has now been established for six weeks. There was no marked difference in the decline registered in different parts of the country, but it was perhaps more noticeable in the South than in the Midlands and the North.

Cholera in Egypt

Deaths from cholera continue to number between 400 and 500 each day, and 800 or more new cases are reported daily. Last Saturday and Sunday there were respectively 496 and 471 deaths. So far there have been no cases reported outside Egypt, and all the neighbouring Arab States are exercising stringent control over travellers arriving by road, air, or sea from Egypt. The Lebanese Government will no longer admit travellers arriving directly or indirectly from Egypt. The *Manchester Guardian* correspondent says that some experts have suggested that "the worst may be over by mid-November, especially if all the large cities can be kept immune as they are at present."

Discussion of Table

In *England and Wales* there was no change in the recent trends of infectious diseases. Further rises occurred in the incidence of measles 383, scarlet fever 230, and acute pneumonia 73, with another fall in the number of notifications of acute poliomyelitis 64 and of whooping-cough 43. Decreases were also observed in the incidence of dysentery 30 and diphtheria 17.

Notifications of scarlet fever are now three times the number recorded six weeks ago when the incidence first began to increase; during the week the largest rises were Staffordshire 55 and Warwickshire 36. The incidence of acute pneumonia, which has been doubled during the past five weeks, has tended to rise more rapidly in the North than in the southern half of the country.

The decrease in the notifications of whooping-cough was contributed by the southern section of the country; in the northern counties a slight rise occurred. The largest increases in the incidence of measles during the week were Yorkshire West Riding 101 and Somerset 46. In both these counties distinct centres of infection were reported, and the largest of these localized outbreaks were: Yorkshire West Riding—Colne Valley U.D. 25, Hebden Royd U.D. 25, Doncaster R.D. 37, and Hemsworth R.D. 23; Somerset—Chard M.B. 15, Yeovil M.B. 55, Shepton Mallet R.D. 13, and Yeovil R.D. 30.

The chief variations in the returns of diphtheria were an increase in Warwickshire 9 and decreases in Durham 8, Gloucestershire 7, and London 7.

Two small outbreaks of dysentery were recorded during the week in Yorkshire West Riding, Shipley U.D. 8, and Norfolk, Blofeld and Flegg R.D. 6. Other large returns of dysentery were Lancashire 12 and London 9.

In *Scotland* there were large rises in the incidence of scarlet fever 85, dysentery 31, and acute primary pneumonia 29. Notifications of poliomyelitis were 19 fewer than in the preceding week. Three outbreaks of dysentery were notified during the week: Aberdeen county 10, Kincardine county 12, and the city of Dundee 12. In the city of Glasgow the notifications of scarlet fever rose from 49 to 93 and the notifications of acute primary pneumonia from 79 to 96.

In *Eire* increases were recorded in the incidence of measles 21 and typhoid fever 15, while the notifications of whooping-cough decreased by 14. An outbreak of typhoid fever involving 13 persons was reported from Limerick, Newcastle R.D. Notifications of diarrhoea and enteritis 80 have remained fairly constant during the past three weeks.

In *Northern Ireland* no large fluctuations were reported in the incidence of infectious diseases.

Quarterly Returns for Eire

During the June quarter the birth rate was 25.2 per 1,000, which was 1.1 above the rate for the second quarter of the preceding year and the largest rate for any quarter during recent years. Infant mortality was 65 per 1,000 registered births and was 8 in excess of the rate for the June quarter of 1946. The general death rate was 15.0 per 1,000, which was 0.9 above the rate for the preceding June quarter. There were 309 deaths attributed to the principal infectious diseases, 52 more than in the second quarter of 1946. Compared with the June quarter of 1946, deaths from whooping-cough increased by 60 and deaths from measles by 22, while deaths from diphtheria decreased by 14. Deaths under 2 years due to diarrhoea

and enteritis numbered 166, a decrease of 18. Deaths from pulmonary tuberculosis totalled 812, and there were 250 deaths from other forms of tuberculosis; these figures were 66 above and 4 below the corresponding figures in 1946.

Births during the September Quarter

A further fall in the birth rate has been announced by the Registrar-General of England and Wales. The birth rate rose steadily from the end of the war to a peak of 22.8 in the first quarter of this year, fell in the second quarter to 22.0, and is now recorded as 20.0 per 1,000 population for the third quarter.

Week Ending October 18

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,352, whooping-cough 1,009, diphtheria 202, measles 1,797, acute pneumonia 531, cerebrospinal fever 44, acute poliomyelitis 276, acute polioencephalitis 12, dysentery 46, paratyphoid 16, and typhoid 7.

Medical News

Rector of Glasgow University

Mr. Walter Elliot, M.P. for the Scottish Universities, was elected Rector of the University of Glasgow on Oct. 25. The polling figures were: Mr. Elliot (C.), 1,022; Dr. O. H. Mavor ("James Bridie") (Ind.), 521; Mr. Tom Johnston (Lab.), 448; and Mr. David Niven (Ind.), 137.

U.S.A. Research Laboratory Burnt

The Roscoe B. Jackson Memorial Laboratory, of Bar Harbor, Maine, is reported to have been destroyed in one of the fires ravaging that region as a result of the prolonged drought. Experimental work on cancer and genetics has for many years been carried on at the laboratory, and animals bred there were distributed throughout the U.S.A. for research purposes. In recent years research at the laboratory has been conducted on the inbreeding of certain strains of rats, rabbits, and guinea-pigs.

Return to Practice in Ireland

The Medical Registration Council of Eire points out to medical practitioners resident in Eire that notices in the public press should do no more than notify the patients of absence from home, or return, or change of address. The Council considers that (1) no notice should appear more than once; (2) no title except that of Doctor (Dr.), or Mister (Mr.), or Surgeon should be used; (3) no degree or qualification should be inserted after the name; (4) in no case should hours or days of attendance be specified; (5) the telephone number and full address should be quoted only in case of taking up residence or change of residence.

B.M.A. Library

The Association's Library is to be transferred from its present accommodation in the main building at B.M.A. House to the first and second floors of the Garden Court wing. To facilitate the removal, the Library will be closed from 12.30 p.m. on Saturday, Nov. 1, until 9.30 a.m. on Monday, Nov. 17.

Chelsea Clinical Society

The first dinner meeting of the new session was held on Oct. 14, with Dr. Neil Maclay in the chair. Mr. Nils Eckhoff opened a discussion on "Surgery in America," and was followed by Sir Heneage Ogilvie. The next meeting will be held on Nov. 11, at the South Kensington Hotel, London, S.W.7.

Postgraduate Education

The North London Postgraduate Medical Institute was formed early this year at the Prince of Wales's General Hospital to provide senior postgraduate teaching in medicine and surgery within the British Postgraduate Medical Federation.

Resettlement of Disabled Persons

A circular from the Ministry of Health points out that the re-education of a disabled patient and supplying him with general information about resettlement facilities is, in the first instance, the duty of hospital staffs—particularly of the almoner's department. Suitable literature may be obtained from the Disablement Resettlement Officers of the Ministry of Labour. In order to provide D.R.O.s with expert medical guidance on the functional effect of disabilities, medical interviewing committees will be set up at certain hospitals this year; further details will be announced later.

Medical Golfing Society

At a meeting held at Deal on Oct. 11 and 12, Dr. W. J. Cotton won the Canny Ryall Cup and Mr. L. G. Brown, *M.C.*, the Milsom Rees Cup.

National Institute for the Deaf

Speaking at the Annual General Meeting of the National Institute for the Deaf recently, Mr. Scott Stevenson said that the research laboratory was now in being under the direction of Mr. D. B. Fry, Director of Phonetics, London University. He thought that the Government-sponsored hearing-aid would be available by the target date of July, 1948. It would be good, but there would always be room for the good private manufacturers, who had done such excellent work in the past. Welfare workers for the deaf must be recognized and must receive adequate compensation for their highly specialized job. He ended by welcoming the formation of the British Association of the Hard of Hearing. Mr. Edward Evans, M.P., followed with a plea for research into the sociology and general needs of the deaf, since too many were being put into dull jobs such as boot-mending, cooking, and needlework. He wanted to see a wider field of vocation available.

Wills

Dr. John Percy Litt, formerly medical officer of health for the Borough of Lytham St. Annes, who died on May 25, left £51,021. Dr. Charles Gordon Gibson, of Launceston, Cornwall, who died on May 4, left £34,561. Surgeon Rear-Admiral Hamlet Mark Whelan, of the Royal Naval Hospital, Plymouth, who died on May 27, left £2,939.

COMING EVENTS

Long Fox Memorial Lecture

The XXXVI Long Fox Memorial Lecture will be delivered by Prof. G. Hadfield in the large physics lecture theatre (Royal Fort), Bristol University, on Tuesday, Nov. 18, at 8.15 p.m. His subject is "Subacute Bacterial Endocarditis." Admission to the lecture is free.

British Association of Physical Medicine

The British Association of Physical Medicine has arranged for the following films to be shown at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C., on Wednesday, Nov. 5, at 5.30 p.m.; (*a*) The Early Diagnosis of Poliomyelitis, and (*b*) The New Horizon. The films will be followed by a discussion, with Dr. F. D. Howitt in the chair.

Royal Sanitary Institute

A sessional meeting of the Royal Sanitary Institute will be held at Belfast City Hall on Thursday, Nov. 6, at 10 a.m., when there will be a discussion on "The Control of the Manufacture and Sale of Ice Cream," with contributions by Dr. S. Barron, Dr. W. G. Swann, and Dr. G. F. W. Tinsdale.

Society of Chemical Industry

Prof. E. C. Dodds, M.D., F.R.S., will deliver a lecture on "Academic Research and the Chemical Industry" before the Manchester Section of the Society of Chemical Industry at the Engineers' Club, 17, Albert Square, Manchester, on Friday, Nov. 7, at 6.30 p.m.

The Vicary Lecture

The Thomas Vicary Lecture of the Royal College of Surgeons, on Lawson Tait, will be given by Dr. I. Harvey Flack on Friday, Nov. 21, at 5 p.m. Dr. Flack is Assistant Editor of the *British Medical Journal*.

Second Army Medical Services Reunion Dinner

The Reunion Dinner for officers and ex-officers of the R.A.M.C. who served with the Second Army, 1944–5, will be held at Kettner's Restaurant, Romilly Street, London, W., on Friday, Nov. 21, at 7.15 p.m. Tickets, one guinea each, are limited in number, and can be obtained by early application either to Dr. R. Gwyn Evans, 33, Sandford Road, Mapperley, Nottingham, or to Dr. R. F. G. Ormrod, Fountain Court, Temple, London, E.C.

Tropical Medicine

The Fourth International Congresses on Tropical Medicine and Malaria will meet in Washington on May 10–18, 1948, under the sponsorship of the Department of State. Over sixty governments have been invited by the Department of State to send official delegations. The officers of the Organizing Committee are: Dr. Thomas Parran, chairman; Dr. George K. Strode and Mr. Clarke L. Willard, vice-chairmen; Dr. Rolla E. Dyer, programme director; Dr. Wilbur A. Sawyer, executive secretary; and Mr. William L. Breese, secretary. There will be twelve scientific sections covering the following fields: research and teaching institutes, tropical climatology and physiology,

bacterial and spirochaetal diseases, virus and rickettsial diseases, malaria, helminthic diseases, protozoan diseases, nutritional diseases of the Tropics, tropical dermatology and mycology, tropical veterinary medicine, public health, and medical and veterinary entomology. Visits will be made to the National Institute of Health in Bethesda, to the laboratories of the Department of Agriculture in Beltsville, and to other institutions and laboratories in and around Washington. Those interested should write to the Executive Secretary, Fourth International Congresses on Tropical Medicine and Malaria, Department of State, Washington 25, D.C., U.S.A., for the preliminary announcement and the advance registration and hotel reservation form.

Australasian Medical Congress

The sixth session of the Australasian Medical Congress (British Medical Association) will be held at Perth, Western Australia, from Aug. 15 to 21, 1948, under the presidency of Dr. D. M. McWhae. The scientific sections of the congress, numbering fourteen, are as follows: Medicine; Surgery; Naval, Military and Air Force Medicine and Surgery; Obstetrics and Gynaecology; Paediatrics; Ophthalmology; Oto-Rhino-Laryngology; Public Health, Tuberculosis, and Tropical Medicine; Anaesthesia; Pathology, Bacteriology, Biochemistry, and Experimental Medicine; Orthopaedics and Physical Medicine; Radiology and Radiotherapy; Dermatology and Industrial Medicine; and Neurology and Psychiatry. The names and addresses of the honorary local secretaries, from whom application forms for membership may be obtained, are: *New South Wales*, Dr. K. B. Noad, c/o British Medical Association, 135, Macquarie Street, Sydney; *Queensland*, Dr. Harold Love, Wickham House, Wickham Terrace, Brisbane; *South Australia*, Dr. J. M. Bonnin, 178, North Terrace, Adelaide; *Tasmania*, Dr. J. P. Millar, 163, Macquarie Street, Hobart; *Victoria*, Dr. Roy F. Watson, 294, Glenferrie Road, Hawthorn, E.2.

SOCIETIES AND LECTURES

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—Thursday, Nov. 6, 5 p.m. Bradshaw Lecture by Dr. Janet Vaughan: The Anaemia Associated with Trauma and Sepsis.

ROYAL SOCIETY OF MEDICINE

Section of Epidemiology and State Medicine.—Monday, Nov. 3, 4.30 p.m. Paper by Dr. E. A. Underwood: History of Cholera in Great Britain; Major-General Sir John Taylor: Current Problems in Cholera Control; Mr. P. Bruce White: Bacteriological and Immunological Aspects of Cholera.

Section of Orthopaedics.—Tuesday, Nov. 4, 5.30 p.m. (Cases at 4.30 p.m.)

Section of History of Medicine.—Wednesday, Nov. 5, 2.30 p.m. Paper by Dr. H. P. Bayon: Karl Marx (1818–83), his Ailments and Relations with Medicine.

Section of Surgery.—Wednesday, Nov. 5, 8 p.m. Presidential Address by Sir Max Page: Surgical Records. Discussion to be opened by Mr. H. Cotton.

Section of Neurology.—Thursday, Nov. 6, 8 p.m. Presidential Address by Dr. C. Worster-Drought: Some Observations on Charcot Arthropathy.

Section of Otology.—Friday, Nov. 7, 10.30 a.m. Presidential Address by Mr. Donald Watson: An Account of the Progress in the Treatment of Mastoid Infection and Some of its Complications.

Section of Laryngology.—Friday, Nov. 7, 2.30 p.m. Presidential Address by Mr. A. J. M. Wright: Milestones in Laryngology. Paper by Mr. Ian G. Robin: Snoring.

Section of Anaesthetics.—Friday, Nov. 7, 5.30 p.m. Presidential Address by Dr. J. H. T. Challis: The Teaching of Anaesthetics to Medical Students.

BRITISH INSTITUTE OF PHILOSOPHY.—At University Hall, 14, Gordon Square, London, W.C., Friday, Nov. 7, 5.15 p.m. Mr. J. D. Mabbott: World Peace and World Morality.

CHADWICK TRUST.—At London Missionary Society, 42, Broadway, Westminster, S.W. Tuesday, Nov. 4, 2.30 p.m. Dr. C. T. Maitland: Hospitals and Health Services.

FACULTY OF HOMOEOPATHY.—At London Homoeopathic Hospital, Thursday, Nov. 6, 5 p.m. Dr. A. Kellner: Artificial Hazards in Prescribing.

LONDON UNIVERSITY.—At Royal Society of Medicine, 1, Wimpole Street, W., Thursday, Nov. 6, 5 p.m. Semon Lecture by Mr. E. D. D. Davis: Applied Anatomy and Physiology of the Pharynx and Oesophagus.

LONDON: UNIVERSITY COLLEGE, Gower Street, W.C.—Tuesday, Nov. 4, 5.15 p.m. Dr. Bernard Katz: Initiation of Impulses by Electric Stimuli. Wednesday, Nov. 5, 5.30 p.m. Dr. M. H. Pirenne: Physiological Mechanisms of Vision.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.—Wednesday, Nov. 5, 3.30 p.m. Mr. Arthur Ling: The Health Factor in Town Planning (illustrated).

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—Monday, Nov. 3, 8 p.m. Guest Lecture by Mr. John Gillies: Simpson: A Pioneer of Anaesthesia. Friday, Nov. 7, 8 p.m. Dissertation by Mr. F. Starer: Biochemical Aspects of Growth Control.

POSTGRADUATE DIARY

EDINBURGH ROYAL INFIRMARY.—Thursday, Nov. 6, 4.30 p.m. Honyman Gillespie Lecture by Prof. T. F. Marrian: The Corpus Luteum Hormone.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—Tuesday, Nov. 4, 5 p.m. Dr. A. D. Porter: Vitamins in Skin Diseases. Thursday, Nov. 6, 5 p.m. Dr. G. B. Mitchell-Heggs: Erythemato-papuiar and Erythemato-squamous Eruptions.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.—Monday, Nov. 3, 2.30 p.m. Miss D. J. Collier: Facial Paralysis. Bell's and other palsies. Nerve grafts. Nerve anastomosis.

LONDON CHEST HOSPITAL, Victoria Park, E.—Friday, Nov. 7, 5 p.m. Dr. R. A. Beaver: Anaesthesia for Thoracotomy.

A lecture and demonstration, with living models, on contraceptive technique, will be given by Dr. Marie Stopes at the Mothers' Clinic, 108, Whitfield Street, London, W., on Thursday, Nov. 6, at 2.30 p.m. Applications to attend must be made in writing to the secretary at the above address.

Prof. J. Lhermitte will deliver a lecture in English on "The Relation of Neurology to Psychiatry" at the National Hospital (Queen Square, London, W.C.) on Friday, Nov. 7, at 4.30 p.m.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

BEATON.—On Oct. 17, 1947, at Dumfries, wife of Dr. Donald R. Beaton, F.R.C.S.Ed., M.R.C.O.G., a daughter.

CODD.—On Sept. 28, 1947, at Southmead Hospital, Bristol, to Isabel May (*née* Wilson), M.B., Ch.B., wife of Dr. William Lawrence Codd, a daughter—Rosemary; a sister for Robert.

MACRAE.—On Oct. 21, 1947, to Dr. and Mrs. J. O. Farquhar Macrae, Church of Scotland Mission, Ichang, China, a daughter—Meriel Fionnla.

MCERVEL.—On Oct. 14, 1947, to Cathleen (*née* Hardman), wife of Major T. McErvel, R.A.M.C., 21, Meredyth Road, Barnes, a son.

RUSHTON.—On Sept. 20, 1947, at Leeds, to Peggy, wife of Dr. J. Rushton, a son.

MARRIAGES

SCRIVENER—COMPTON.—On Oct. 15, 1947, at Chichester, Captain John P. Scrivener, M.B.E., R.A.M.C., to Mrs. Patricia U. Compton.

THOMAS—ANDERSON.—On Oct. 8, 1947, at Northwood Presbyterian Church, Harold Ernest Thomas, M.B., M.R.C.P., to Elizabeth Jean Anderson.

DEATHS

CAMPBELL.—On Oct. 17, 1947, at Guildford, Surrey, William Sibbald Campbell, M.D.

CHARLES.—On Oct. 15, 1947, at Stanley, Co. Durham, while out walking, John Charles, M.D., aged 82.

CROUCH—On Oct. 19, 1947, at the Private Wing, University College Hospital, London, W.C., Harold Armstrong Crouch, O.B.E., M.C., M.R.C.S., L.R.C.P., late R.A.M.C. and Sudan Medical Service.

ELLIOTT.—On Oct. 7, 1947, at the British Military Hospital, Haifa, Palestine, Alexander McKenzie Elliott, M.B., B.Chir.

FAWCUS.—At Hillingdon, Middlesex, Sir Harold Fawcus, K.C.B., C.M.G., D.S.O., D.C.L., M.B., late R.A.M.C., Director-General, Army Medical Services, 1929 to 1934, aged 71.

FOSKETT.—On Oct. 4, 1947, at Karamea, New Zealand, Walter Foskett, M.C., M.D., aged 57.

FRENCH.—On Oct. 11, 1947, at Toronto, George William Henry French, M.D., F.R.C.S., late of Hornsey.

GORDON.—On Oct. 25, 1947, George Gordon, M.B., Ch.B., 8, Woodthorpe, Oxford Place, Manchester.

GRANT.—On Oct. 23, 1947, at 44, Southlands Road, Weymouth, John William Geary Grant, F.R.C.S.

HALLIDIE.—On Oct. 19, 1947, Andrew Hallidie Smith Hallidie, F.R.C.S., of The Guildhall, Cambridge, aged 85.

HARTE.—At 103, Botanic Road, Dublin, Thomas Christopher Harte, L.R.C.P. and S.I. and L.M.

HINDHAUGH.—On Oct. 9, 1947, Ernest Arnold Hodgson Hindhaugh, F.R.C.S., aged 42.

HUGHESDON.—On Oct. 17, 1947, Mary Redfern Hughesdon (*née* Davies), M.B., B.Ch., wife of Dr. P. E. Hughesdon.

LE FEUVRE.—On Oct. 16, 1947, at Kenilworth, Capetown, William Philip Le Feuvre, M.R.C.S., L.R.C.P., aged 88.

LUCAS.—On Oct. 21, 1947, Simon Levy Lucas, M.B., Ch.B.

MACCORMICK.—On Oct. 25, 1947, at Le Val, St. Brelade, Jersey, Sir Alexander MacCormick, K.C.M.G., K.B., M.D., F.R.C.S.

MACLEAN.—On Oct. 17, 1947, at 10, Marius Road, Balham, S.W., Charles Forbes Maclean, M.B., Ch.B.

MASON.—On Oct. 12, 1947, at 61, Lower Baggot Street, Dublin, Henry William Mason, F.R.F.P.S., L.R.C.S.I.

PICKERING.—On Oct. 16, 1947, Harold John Pickering, M.C., L.R.C.P., L.R.C.S.Ed., 48, Canfield Gardens, N.W.

PHILLIPS.—On Oct. 21, 1947, at Davison Children's Home, Danby, North Yorks, Wilfrid Westwood Phillips, M.B., Ch.B., late of St. Margarets, Twickenham.

PINHORN.—On Oct. 22, 1947, at Tunbridge Wells, Richard Pinhorn, M.R.C.S., L.R.C.P., aged 93.

RADCLIFFE.—On Oct. 19, 1947, Frank Radcliffe, M.D., The Grove, Dedham, aged 75.

RIDDOCH.—On Oct. 24, 1947, at the London Hospital, E.1, George Riddoch, M.D., F.R.C.P., aged 58.

STARLING.—On Oct. 18, 1947, Edwin Alfred Starling, M.B., M.Ch., aged 90.

STEVENSON.—On Oct. 16, 1947, in Malta, Surgeon Commander Alec King Stevenson, R.N.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Bates on Better Eyesight

Q.—*W. H. Bates, in a book entitled "Better Eyesight Without Glasses," has propounded the theory that: (a) the prevalent view that errors of refraction are incurable "does not fit the observed facts"; (b) "the lens is not a factor in accommodation and that the adjustment necessary for vision at different distances is affected in the eye, precisely as it is in the camera, by a change in the length of the organ, this alteration being brought about by the action of the muscles on the outside of the eyeball . . ."; (c) correcting lenses (glasses), far from doing anything to improve errors of refraction, are definitely injurious to the eyes; (d) "all abnormal action of the external muscles of the eyeball is accompanied by a strain or effort to see, and that with the relief of this strain the action of the muscles become normal and all errors of refraction disappear . . ."; and (e) by exercises designed to ensure relaxation of the "strain" and the training of the external muscles of the eye, errors of refraction can be cured in a matter of months or a year. Dr. Bates acknowledges that his theories controvert the "practically undisputed teaching of ophthalmological science for the better part of a century" but that he has been driven to his conclusions by carefully established facts. I should be glad to know if the theories propounded by Dr. Bates have ever been seriously tested in this country and, if so, with what results.*

A.—A detailed criticism of Bates's hypotheses was given in an annotation in this *Journal* on September 13, 1941 (p. 383). As regards the specific points raised here, the following observations are relevant:

(*a*) Errors of refraction are incurable in the sense that the error remains unaltered in adult life. Hypermetropia is "curable" in childhood in so far as there is normally a decrease in its degree. The onset of myopia in later life from sclerosis of the lens may also diminish the degree of hypermetropia. For the rest the facts observed do fit with the view that errors of refraction are "incurable."

(*b*) There is considerable controversy as to the mechanism whereby the lens plays its part in accommodation, but there is no doubt as to the fact that the lens is the essential factor in accommodation. The daily experience with aphakic patients who have lost their lens in childhood owing to needling operations, or later in life by extraction, is conclusive of the fact that without the lens there is no accommodation. All patients who have lost their lens, from whatever cause, require a reading correction. The one exception is the high myope who after operation has a near point enabling him to read without glasses. There is no evidence whatever that accommodation is induced by alteration of the length of the eye. This view is of historical interest only, and was held in the eighteenth century.

(*c*) No one has suggested that glasses "improve" errors of refraction. The view that glasses are injurious to the eye goes back to the beginning of the last century.

(*d*) The suggestion that errors of refraction are psychological in origin does not lend itself readily to disproof. As for the proof for this contention, it is based on the mode of retinoscopy practised by Bates; it involves a capacity to observe half a dozen or more changes of refraction in the space of a second.

(*e*) The extension of Bates's unproved theory to psychological treatment is obviously also an aspect not readily disproved.

It would be unfair to condemn Bates's system on theoretical grounds alone. Valid therapeutic systems may have a poor theoretical interpretation. The onus of the proof must, however, rest on its originator, and it cannot be said that any convincing evidence has been brought forward. There is also much in Bates's book, such as the restoration of vision in optic atrophy, which is at variance with accepted views on the subject.

Long before Bates, however, it was recognized that "there were none so blind as won't see." Bates's "exercises" are a form of psychological treatment for suggestible patients requiring these forms of therapy. Such occasional improvements as were noted in organic cases during the course of Bates's treatment are in all probability instances of remission in the course of chronic relapsing affections like iridocyclitis. It would be strange if such instances did not occur amongst the large number of patients who have undergone Bates's treatment.

Osteoarthritis of Hips

Q.—*What are the present accepted treatments for severe osteoarthritis of both hips, with special reference to intra-articular injections of a lubricating fluid into the joint, as advocated by Dr. P. Morris in his book, "Fifty Years a Surgeon"?*

A.—Disabling osteoarthritis of both hip-joints is a formidable and still unsolved problem in therapeutics. Treatment may be classified into non-operative and operative methods. Non-operative methods of treatment include the following: (1) Adjustment of the patient's routine of life in order to allow increased rest and to diminish the strain on the hip-joints. (2) Physiotherapy, in the form of local heat from infra-red radiation, or preferably short-wave diathermy, and measures to build up the normal supports of the hips—that is, the surrounding muscles. (3) Correction of any inequality in leg length due to fixed deformity by appropriate raising of one shoe. (4) Deep *x*-ray therapy. (5) Intra-articular injections. Treatment by intra-articular injections is under fairly extensive trial at several centres at the present time. Most authorities recommend the employment of solutions of weak acids as being more effective than fluids having a lubricating action. Solutions of lactic acid, of acid potassium phosphate (1%), or of acid magnesium phosphate (1%) are variously recommended. A course of six to twelve injections, each of 20 ml., is given at weekly or two-weekly intervals. The results of this form of treatment are difficult to assess. Most observers agree that they are inconstant and uncertain, but that a proportion of patients do appear to gain some symptomatic relief. A satisfactory response is, however, unlikely to be secured in cases of advanced disease or where a severe degree of deformity is present.

Operative treatment is usually advisable when the disease is of severe degree, provided that the general condition of the patient is suitable. The operations available, in order of increasing magnitude, are: (1) Neurectomy of the obturator nerve and the nerve to the quadratus femoris. This cuts off a large proportion of the pain fibres to the hip-joint, and is suitable when a useful range of movement is still present. This method of joint denervation is popular in some French clinics at present. It is still very much *sub judice*. It is not as effective as lateral chordotomy but it is a much simpler procedure. (2) Osteotomy of the femur at the level of the inferior margin of the acetabulum, as advocated by McMurray. (3) Arthrodesis of one hip with arthroplasty or pseudarthrosis of the other. (4) Arthroplasty of both hips. The last two methods are particularly applicable to cases where movement is greatly restricted or where considerable fixed deformity is present.

Kapeller-Adler Pregnancy Test

Q.—*Could you give me details of the Kapeller-Adler test for urinary histidine used as an aid in the diagnosis of pregnancy? How long after conception does this test become positive?*

A.—The test is preferably carried out on a twenty-four-hour specimen of urine, but failing that the first morning specimen may be used. The urine is treated with a bromide reagent followed by a mixture of ammonia and ammonium carbonate, and the whole is then placed in a bath of boiling water for two to three minutes. The presence of histidine is indicated by the development of a red or reddish-violet colour. If the urine is alkaline it needs special preliminary treatment with 10% sulphuric acid and N/10 potassium permanganate solution. For further details, attention to which is important, reference should be made to an article by R. Kapeller-Adler (*J. Obstet. Gynaec. Brit. Emp.*, 1941, **48**, 141). According to this author, a positive histidine test may be obtained as early as the first week after the first missed period, and sometimes even before a period is missed. In threatened abortion and missed abortion the

reaction may be only weakly positive; it remains positive in hydatidiform mole, but becomes negative when pregnancy is complicated by severe toxaemia. False positive reactions are sometimes seen in cases of over-function of the anterior lobe of the pituitary. It is difficult to say how reliable is the test. Kapeller-Adler claims almost 100% accuracy in cases of normal pregnancy, and only a 3% error in non-pregnant women. A few other workers have found it to be 99% accurate in cases of pregnancy, but record an error as high as 15% in non-pregnant women. It has been tried out in many laboratories in this country, and the fact that it has not come into general use and replaced biological tests rather indicates that it is not accurate enough to be of much practical value, or at least that reliable results depend to a large extent on the personal factor in the carrying out of the technique and in the interpretation of the colour reaction.

Addison's Disease

Q.—*Has there been any recent advance in the treatment of Addison's disease? The present treatment consists in administration of extract of adrenal cortex and sodium chloride, but the question of gland implantation has been raised.*

A.—Desoxycortone has proved a useful alternative to adrenal cortical extract and has two advantages: (1) 1 ml. is equivalent to 10 ml. of extract, and (2) tablets—for example, four of 100 mg. each—can be implanted in the subcutaneous fat of the abdomen and continue to act for some eight months. Recently in the U.S.A. Upjohns has produced a cortical extract from pigs which is said to be far more potent than the cortical extract usually obtained from cattle, in the proportion of one to five. Further, it is qualitatively richer in the glycogen-forming or carbohydrate-regulating hormone as distinct from the salt-and-water-regulating hormone, and this is of particular advantage in those patients with a tendency to hypoglycaemia. As to implantation of actual adrenal gland, this has been tried many times, and occasionally favourable reports are made. Broster recently reported a new technique in which a branch of the epigastric artery is implanted into the adrenal vein of the transplanted gland. However, in practice the method of adrenal transplanting has not come into popular use, and the probability is that it is too uncertain and hazardous.

Beeswax in Oily Solutions of Penicillin

Q.—*Beeswax is incorporated in oily injections of penicillin to retard absorption. What is the fate of the injected beeswax and how does it act?*

A.—The usefulness of incorporating 4.8% of beeswax in the arachis oil used as a vehicle for penicillin is amply attested by the work of Romansky and Rittman. The result is a very viscous medium undergoing slow dispersal; the contained penicillin is consequently slowly absorbed and exerts a prolonged action. The whole of the vehicle is ultimately disposed of by phagocytosis, and is said to have no injurious effect.

Intertrochanteric Fracture of Femur

Q.—*Is an inch shortening and a right-angled coxa vara recognized as a good result following an intertrochanteric fracture of the femur?*

A.—While the result described cannot be regarded as perfect, it would not necessarily be inconsistent with a satisfactory recovery of function. In an elderly patient such a result would be accepted by most surgeons if it was felt that a better anatomical reduction could be achieved only by operation. Though intertrochanteric fractures invariably unite, the union remains soft for five or six months in elderly patients, and it is during this late period that secondary deformation is likely to occur, resulting in coxa vara and shortening. The only way this can be prevented is by maintaining traction in bed for four or five months; or by subjecting the patient to an extensive operation to apply one of the several methods of internal fixation. As always in old people, it is a question of gaining sufficient function for their needs by a method which carries the least risk to life. In younger patients, however, it should always be possible to obtain a perfect anatomical and functional result by early complete reduction and maintenance of the reduction by internal or external splinting.

Antiseptic Effect of Ether

Q.—*Ether applied to the skin and allowed to evaporate is not actively antiseptic, but to what extent is it effective if a little is kept with a hypodermic syringe in a metal pocket-case?*

A.—On the contrary, ether, although said to be less effective for the purpose than spirit, does kill extraneous bacteria on the skin. Neither can be depended on to sterilize a syringe. The most that ether can be expected to do in the type of use described is to sterilize the outside of the needle. For reference to further information on the sterilization of syringes see last week's issue (p. 680).

Toxicity of Phenobarbitone

Q.—*What daily dose of phenobarbitone is it safe to give for a prolonged period as a sedative? Does the drug accumulate, and if so what are the signs that this is taking place?*

A.—The only guide to the daily dose of phenobarbitone which it is safe to give as a sedative for a prolonged period is that the maximum pharmacopoeial dose is 2 gr. (0.13 g.). This is a dose for repeated use, and it remains for the doctor to discover, for any particular patient, how often this dose can be repeated with safety. Patients vary a great deal in their susceptibility to all barbitone derivatives. The variation has been determined for one derivative—namely, "sodium amytal"—and it was found that the most resistant patients required four times as much as the most susceptible ones. It is likely that there are patients in whom 2 gr. of phenobarbitone daily will produce some signs of accumulation, while others may tolerate 6 gr. (0.4 g.) or more daily. Phenobarbitone is excreted very slowly by the kidney and therefore accumulates. The signs of accumulation are dullness and drowsiness; there is also a diminution in the depth of respiration.

NOTES AND COMMENTS

Tobacco and Poliomyelitis.—Dr. R. MONAHAN (Geneva) writes: Referring to this subject in "Any Questions?" (Oct. 11, p. 599) this writer, in suggesting immunity for smokers, seems to have got hold of the wrong end of the stick. Tobacco smokers invariably develop the inflamed throat so favourable to infecting children. Nowadays children are brought up in a tobacco-drenched atmosphere, irritating their throats, rendering them more susceptible to the poliomyelitis virus. To-day the whole atmosphere of England is contaminated as the result of this filthy habit. It might be interesting to compare respective graphs showing the increase of smoking in the last 30 years and the greater incidence of poliomyelitis.

Loosening the Piston of a Syringe.—Dr. S. J. D. ESSEX Rustenburg, Transvaal, writes: The simplest way of loosening the piston of a syringe (Aug. 30, p. 358) is to dip the syringe in ice-water. Packing it with ice is apt to crack the glass, as the cold is distributed unevenly, but in every refrigerator there is a tray to catch the water when defrosting. We have to defrost every day to keep the refrigerator in good working order. The tray gets full of icy cold water in which the syringes are dipped and left for an hour or longer. We invariably find that the piston is then quite loose owing to the fact that metal contracts more than glass through cold.

Addendum.—We should have indicated in our issue of Oct. 25 that the paper on "Shock in Obstetrics" by Prof. W. A. Scott (p. 647) was read originally at the International Congress of Obstetricians and Gynaecologists held in Dublin from July 7–11 on the occasion of the Rotunda Bicentenary Celebrations.

All communications with regard to editorial business should be addressed to The EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.
Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.
ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: *Britmedads, Westcent, London.*
MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra, Westcent, London.*
B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.